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ARMY SERVICE FORCES

ANNUAL REPORT

FOR THE FISCAL YEAR 1944

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U.S. Army Service Forces
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ANNUAL REPORT
of the
ARMY SERVICE FORCES
for the Fiscal Year
1944

UNITED STATES
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ARMY SERVICE FORCES

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for the Fiscal Year

1944

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WAR DEPARTMENT

Army Service Forces

Washington, D. C.

8 SEPTEMBER 1944.

MEMORANDUM FOR: The Undersecretary of War.
The Chief of Staff.

Subject: Annual Report of the Army Service Forces for the Fiscal Year 1944.

1. I am transmitting herewith the annual report of the Army Service Forces for the fiscal year 1944.

2. The primary job of the Army Service Forces is to procure the supplies for America's armies and to transport both men and supplies to the fighting fronts of the world. It follows that the Army Service Forces constitute the iron link between industrial America and her fighting men. This report therefore mirrors not only the course of great campaigns overseas but the whole mighty industrial effort of this Nation. That effort, I believe, is unmatched in the history of nations.

3. The year saw the tempo of Allied attacks rise sharply. The Japanese were driven from the Aleutians. We invaded Pantelleria, Sicily, the toe of the Italian boot, Salerno, and Anzio and prepared to invade southern France. In the Pacific our troops landed on Rendova, New Georgia, Makin, Tarawa, New Britain, and scores of other islands. The year also saw final preparations for the Normandy invasion; in fact, the year ended with the assault well under way.

4. We armed and equipped the French army in Africa, sent to Chinese troops as much tonnage as could reach them. The Russian army, heavily supplied with American armament, made history at Orel, Kharkov, Bryansk, Stalino, Smolensk, Kiev, and a thousand other strong points.

5. Throughout the year the pace of the war grew faster. Pressure on the enemy increased steadily. We used more men, more guns and shells, more planes and bombs. Our troops needed more food; they had to be transported in greater numbers to greater distances. The demands on Army Service Forces grew from day to day. Yet in spite of the growing load, the Army Service Forces formulated, tested, and put into operation procedures and methods that greatly increased efficiency, reduced both man-hours and costs, improved the quality of arms and supplies, and speeded the flow of equipment to the troops on many fronts. At the same time the ASF improved its nonsupply functions, in the intricate and difficult field of administrative services.

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6. To the Army Service Forces fall also many activities promoting the welfare of this country's soldiers. Never has an army been provided with so many services—services which not only increase the striking power of our fighting forces but also help cement the ties which bind the uniformed man in the service with the members of his family who furnish him with the tools of war.

7. A short version calling attention to the highlights of this report has been prepared for public distribution. This report provides detailed information for the use of the War Department and others closely associated with the work of the Army Service Forces.

BREHON SOMERVELL,
Lieutenant General,
Commanding.

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Dissemination of Restricted Matter

The information contained in restricted documents and the essential characteristics of restricted material may be given to any person known to be in the service of the United States and to persons of undoubted loyalty and discretion who are cooperating in Government work, but will not be communicated to the public or to the press except by authorized military public relations agencies. (See also par. 23b, AR 380-5, 15 Mar. 44.)

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Chapter 1. DISTRIBUTION

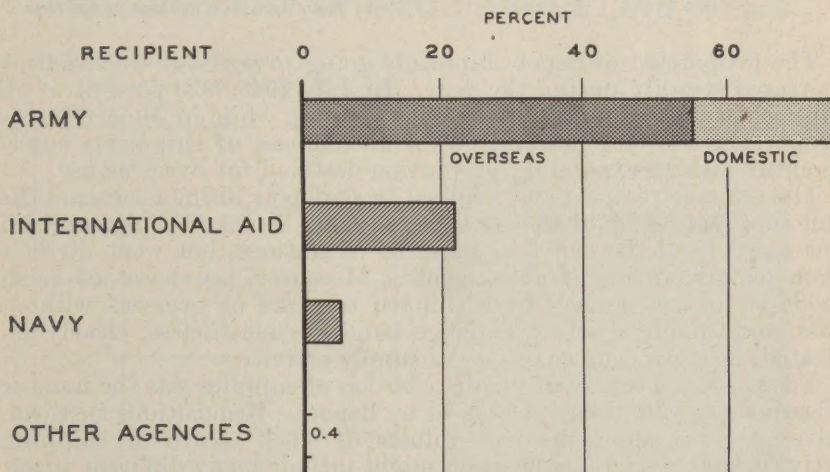
The fiscal year ending 30 June 1944 saw the full flood of American productive enterprise reaching American and allied soldiers all over the world. Increased production meant increased distribution. During the fiscal year the value of major items of supplies distributed by the Army Service Forces amounted to some 13 billion dollars. This was about equal to the value of the same types of supplies distributed during the entire preceding 3 years, from 1 July 1940 to 30 June 1943. These figures exclude the distribution of foodstuffs, and the thousands of small items purchased and distributed by the ASF.

Gross distribution of major ASF items for the last 6 months of the fiscal year 1944 are shown in the accompanying chart. The Army received 73 percent of the supplies distributed, others of the United Nations received 21 percent, and the Navy about 5 percent. Within the Army, about 54 percent of the total issues and nearly three-fourths of all Army issues went overseas.

CHART 1

GROSS DISTRIBUTION OF MAJOR ASF ITEMS

1 JAN-30 JUN 1944

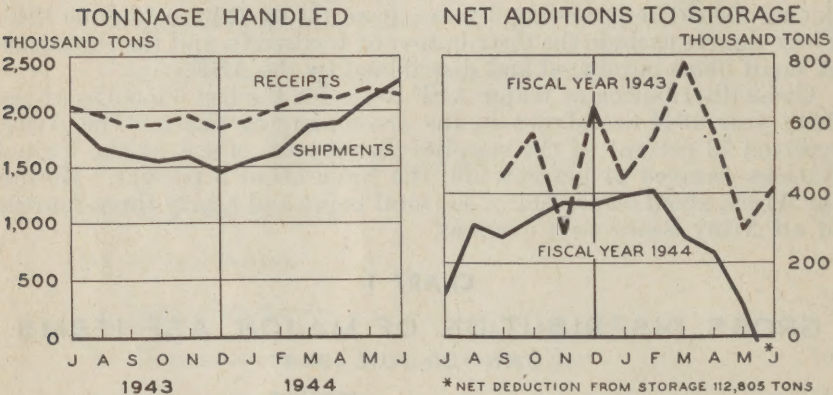


A different measure of Army Service Forces supply activities is to be found in the tonnage handled by depots. In the 10 months from September 1942, through June 1943, ASF depots received over 17

million tons of supplies; for the corresponding 10 months ending 30 June 1944, they received 20 million tons, an increase of nearly 13 percent. Shipments out of depots showed an even greater increase, 36 percent. For the last 10 months in the fiscal year 1943 outgoing tonnage amounted to 12.8 million, while for the last 10 months of the fiscal year 1944 shipments out came to 17.5 million tons.

Tonnage received in or shipped from depots during the fiscal year 1944 varied from 1,500,000 to 2,250,000 tons per month. On a tonnage basis, peak receipts occurred in May 1944, and peak shipments occurred in June. In this last month depot shipments exceeded receipts, thereby reducing the total amount in storage. This reduction resulted from the continued large demands for ammunition. Additions to storage were consistently lower in 1944 than in 1943.

CHART 2
TONNAGE HANDLED AT DEPOTS



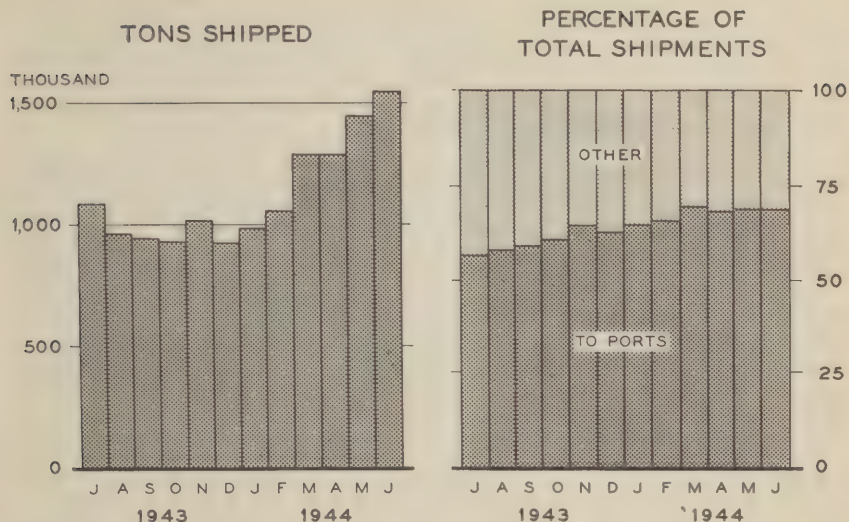
The proportion of depot shipments going to ports of embarkation increased steadily during the year. In July 1943, 56.3 percent of all shipments went to ports for overseas loading, while in June 1944 the proportion was 68.9 percent. Thus an increase of shipments corresponded with an expanding proportion destined for overseas use.

The tonnage received and shipped from depots did not measure the full supply activity of the ASF, since many items of equipment did not move from the depot to ports or to stations, but went directly from manufacturing establishments. Moreover, purchases of fresh foods at market centers were shipped to posts or overseas without passing through depots. Tonnage handled, nonetheless, clearly indicated the expanding character of supply activities.

Yet another measure of the distribution of supplies was the number of requisition line items processed by depots. Requisitions in themselves did not show the real volume of stock record or shipping activity, since a single requisition might include many different items, or it might cover only a few. Consequently, the practice was adopted of counting the line items on requisitions to gain a truer measure of supply activity. Each line item of a requisition represented some desired item of supply, in almost any conceivable quantity, from one lo-

CHART 3

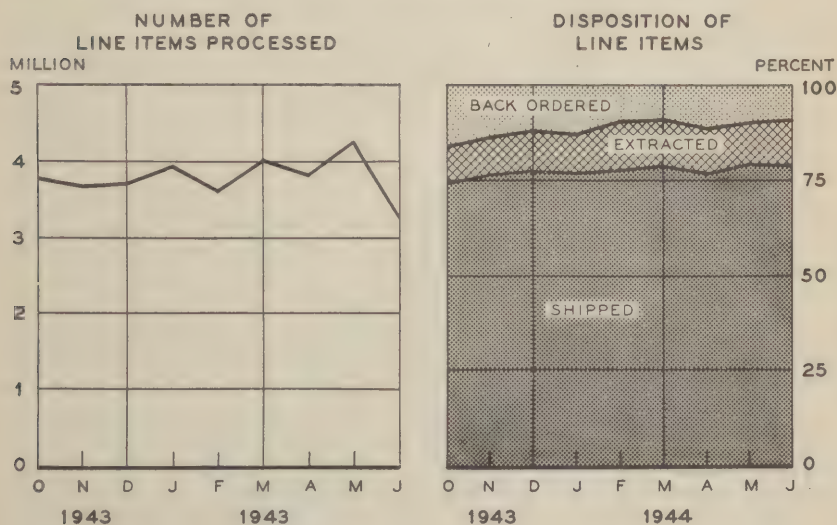
DEPOT SHIPMENTS TO PORTS



comotive or harbor craft to 1,000,000 rounds of ammunition or 5,000 bath towels. The total number of line items on requisitions processed by depots of the Army Service Forces from October 1943 through June 1944, is shown in chart 4. The peak number of line items handled was in May 1944, when 4.2 million were processed. The drop

CHART 4

PROCUREMENT OF REQUISITION LINE ITEMS



in June occurred because of the temporary decline in supply requisitions from the European Theater of Operations until bases could be established in France.

In October 1943, depots shipped 78 percent of the line item requisitions processed, while in June they were shipping nearly 90 percent. With the drive to centralize stockage of some items during the year, extracting from one depot to another could not be eliminated. On the other hand, the number of line items requiring a back order for procurement was reduced from 16 percent to 8 percent.

Yet another indication of the growing volume of supply activity was to be found in tons of cargo shipped overseas. These data are summarized in chapter III. By way of contrast, it may be noted that in the first 6 months of the calendar year 1943, 4.2 million tons were shipped from depots to ports, while for the corresponding 6 months of 1944, 7.6 million were shipped. The more troops sent overseas, the more supplies which continually followed them.

By whatever measure used, the supply work of the Army Service Forces grew as the Army in many different theaters hammered the enemy.

Chapter 2. OVERSEA SUPPLY

The oversea supply system developed in January 1942 has continued to function with growing effectiveness. This system was based upon three elements: The oversea port to which the theater commander directed supplies to be sent, the port of embarkation through which supplies were shipped to the assigned oversea base, and the depots in the zone of the interior where supplies were stocked in anticipation of oversea needs.

A characteristic feature in the operation of oversea supply was the extensive authority given the oversea theater commander or task force commander in determining his needs. Both in the preparation and the execution of an operation, in supply as in tactics, the War Department policy was to decentralize responsibility to the oversea commander. In supply matters this meant that he had the decisive voice in determining his requirements within the broad limits of higher policy and availability.

Another feature of the supply system was the key position of the commander of the port of embarkation within the United States. One of these ports, sometimes supplemented by the facilities of other ports, was assigned to move supplies to an oversea command. Through this port moved the men and equipment dispatched to the oversea commander. Through this port passed the supplies necessary to support the forces already sent overseas. The port commander was responsible for maintaining a continuing flow of supplies to the bases of the oversea commander. Requisitions for the normal or routine support of oversea forces came to a port of embarkation. Requirements for special operations and all demands in excess of normal support came directly to Washington. Through the port likewise flowed Air Forces supplies, although their type and number were controlled by the Army Air Forces rather than by the Army Service Forces.

In the summer of 1942, it became evident that the Army and the Navy were in serious competition for bases, facilities, shipping, and supplies in the South and Southwest Pacific areas. Large quantities of shipping were becoming immobile in the South Pacific because of limited unloading facilities and limited shore facilities for the movement and storage of supplies. The Director of Plans and Operations, Army Service Forces, was dispatched to the Pacific in the fall of 1942 to ascertain the cause of this situation. It was determined that the principal difficulties resulted from lack of coordination in planning and operations on the part of the Army and Navy staffs in the Pacific area. Supplies and shipping for the Navy were being requisitioned and moved in the Pacific independent of the Army and vice versa.

As the result of the visit of the Director of Plans and Operations, ASE, a joint logistics board was agreed to by Admiral Halsey, in

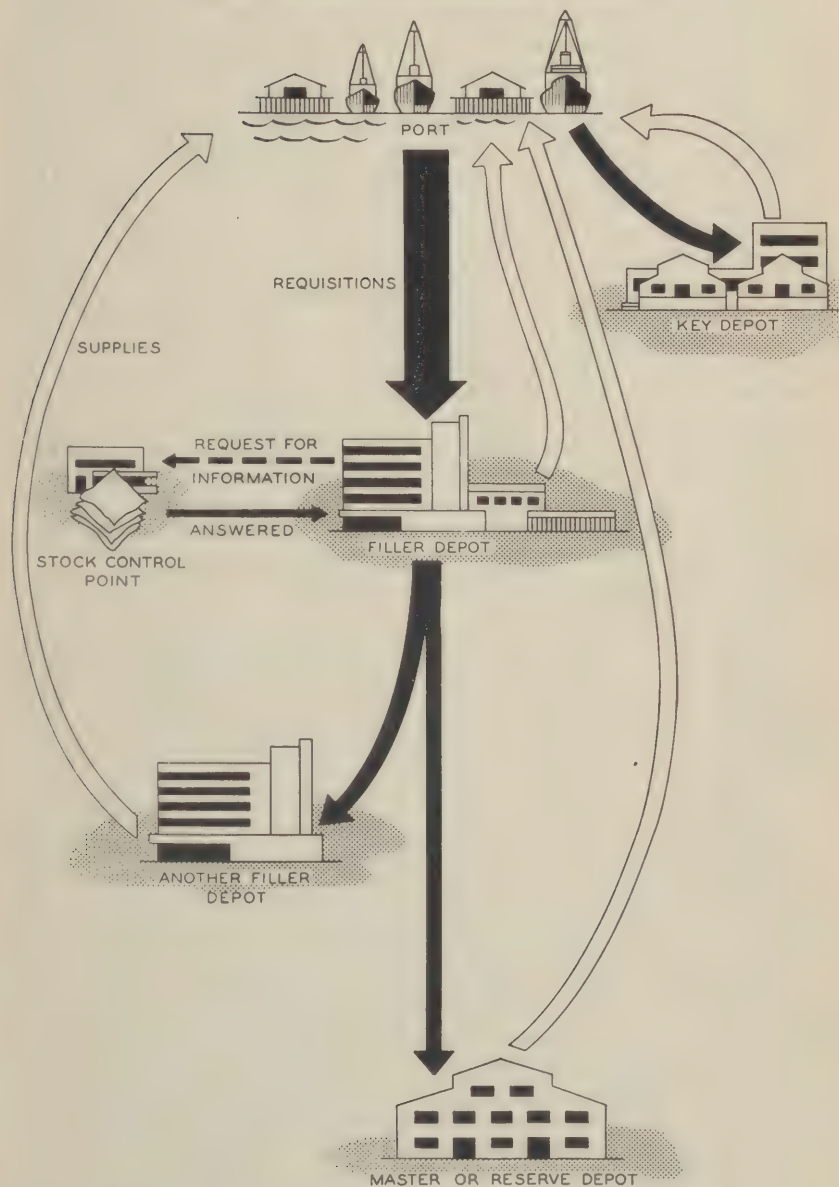
command of the South Pacific. This logistical board was placed ashore, consisting of representatives of the Army and Navy working together, and succeeded in a short time in clearing up a congestion of shipping and in effectuating better distribution of supplies and equipment common to the Army and the Navy. This step evolved further into a Joint Logistical Section of the Staff of the Pacific Ocean areas commander in the early part of 1943. This joint section, consisting of Army and Navy officers, on the staff of Admiral Nimitz, the present commander of the Pacific Ocean areas, planned joint logistical operations and screened joint requirements of the Army and Navy. The Army and Navy continued through 1944 to improve this cooperation and broaden the scope of these operations.

By 1 July 1943 it was obvious that all facilities within the United States would be taxed to meet troop and supply commitments. Plans had been made for sending 150,000 men overseas each month from July through December and to send over 200,000 men a month thereafter. Each soldier sent overseas required 5 tons of organizational equipment and supplies to be shipped with him. With a million and a half men overseas at the beginning of the fiscal year, nearly 160 fully loaded Liberty ships had to be dispatched from United States ports each month for their maintenance. Each new unit meant additional maintenance requirements in overseas shipments. For these reasons it was imperative that only those supplies be shipped which were essential for overseas needs. Excess stockage had to be avoided and the shipment of unneeded supplies halted.

New levels of supply for overseas theaters were established by the War Department on 10 July 1943. In general, each overseas theater was permitted to build up and maintain from 60 to 180 days of supply, depending upon the strategic situation and the possibility of interrupted supply. This provision applied to class I (subsistence), class II (equipment replacement), and class III (gasoline and fuel) supplies. Special types of operational supplies were separately computed, as will be mentioned later. Ammunition was also separately allotted each theater. The total supply levels that might be maintained at one time overseas were at lower levels for Hawaii and for Latin American bases.

By the beginning of the fiscal year there was already a tendency away from so-called "automatic" supply. One by one various categories of supplies were placed on a requisition basis. In September 1943 the monthly matériel status report was made a virtual requisition. For some 600 supply items each oversea theater indicated the quantity-on-hand at the end of the month. Data on quantities in transit were provided by ports of embarkation, which prepared the reports and sent them to ASF headquarters and to technical services. Shortages were then ordered shipped by the technical services. A monthly report on ammunition status, including consumption, was the basis for shipping quantities overseas. By the end of the year all overseas theaters requisitioned subsistence from ports. Previously subsistence was supplied semiautomatically according to monthly status reports. Petroleum products were shipped on the basis of monthly estimates of requirements, projected 3 months in advance, forwarded from theaters to the Army-Navy Petroleum Board. The Board informed the Quartermaster General (the Corps of Engineers

CHART 5
OVERSEAS REQUISITIONS
FOR NON-CONTROLLED ITEMS



and the Ordnance Department for certain items) of the quantities to make available for shipment.

War Department Circular 220, 20 September 1943, established the general outlines of the overseas supply system as they had developed to that time. Overseas supply was divided into three consecutive phases. In the early stage when a new area of operations was being established, supply from the United States would be automatic; that is, ports of embarkation would send maintenance and replacement supplies in the amounts believed to be needed. As soon as possible the overseas theater would move into the second phase of supply, "semi-automatic." Ammunition, and controlled items of equipment were then supplied on the basis of the status reports received at ports of embarkation. The ASF endeavored to keep these items at the total authorized level for each theater. Overseas commanders requisitioned the quantities of other supplies necessary to maintain their supply level directly from the port. The third phase of supply arrived when an overseas theater became quiescent; that is, when active military operations came to a close. When this stage was reached, all supply for that theater was placed on a requisition basis.

Automatic supply was found workable for those items which were consumed at a fairly uniform rate, particularly rations and fuel. The demand could then be estimated with reasonable accuracy within the United States and the overseas theater freed from the burden of requisitioning its supplies. The hazards of war, however, upset calculations based upon the uniform recurrence or repetition of a given set of circumstances. Accordingly, automatic supply frequently resulted in excesses of some items and shortages of others. To prevent this situation each theater was expected to move as rapidly as possible into the period when supplies would be sent to it either on the basis of matériel status reports or requisitions.

Circular 220 directed overseas commanders to establish and maintain an effective inventory control system to report excess or unbalanced stocks and to review their maintenance requirements so that these might be adjusted as necessary. The supply status of a theater depended in large measure upon the efficiency of the supply organization within that theater.

By 1 January 1944 sea communications to the various theaters had been made secure. The available shipping for transport of supplies was constantly increasing. Normally shipments could now be expected to reach all but one theater within 30 days from the time of shipment. The capacity of the enemy to isolate any overseas base had become negligible. It was then possible to curtail the reserve supplies being held overseas in anticipation of a possible interruption in supply. On 1 January 1944 the War Department directed that overseas supply levels be reduced. In consequence, overseas commanders were informed that the total reserves that they might maintain were to be substantially reduced. On an average, where 3 months' supplies had been held in overseas theaters the quantity was reduced to a 2-months' supply level. This step made additional shipping available for the support of larger numbers of troops moving overseas. At the same time it became increasingly important for each theater to have exact information about where its stocks were held and to keep those stocks moving. War Department Circular 220, 1943 was reaffirmed by Cir-

cular 203, issued on 23 May 1944. The only particular change introduced by this new directive was to make it clear that the War Department in Washington would set overseas operating levels and that theater commanders and port commanders might not adjust these.

An important change in the monthly matériel status reports was directed on 14 May 1944. Thereafter each theater was to include data on losses of equipment in battle action or from other causes. Ports of embarkation in the United States maintained a perpetual inventory for the theater by adjusting the initial delivery to reflect additional shipments and reports of losses. The monthly matériel status report was also modified to include a statement for each item required. If a theater commander felt that he did not need all the supplies to which he was entitled, he was expected so to indicate. Finally, the status reports thereafter included specifications on supply markings. In this way, more than ever, these reports resembled requisitions.

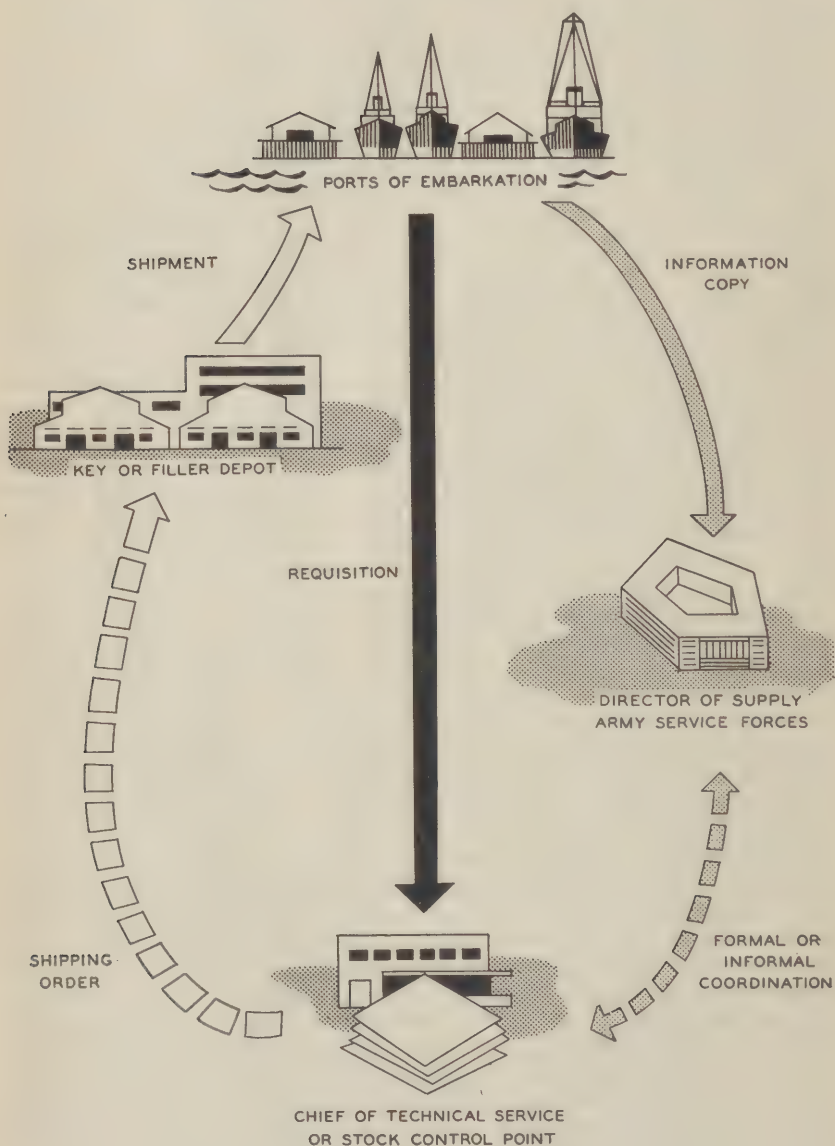
To help the overseas commander in his supply responsibilities, the Army Service Forces prepared a stock control manual for use in theaters of operations. This manual, published on 15 May 1944 as Part 3, TM 38-205, established a procedure for maintaining records which would accurately indicate quantity-on-hand and due-in for the theater. The method of requisitioning was changed to permit the use of an order and shipping time factor. In this way the theater knew at all times the quantity authorized to be on hand and on order and could maintain the correct amount of supplies by requisition within the over-all limits authorized by the War Department.

As a part of the overseas stock control system, ports of embarkation were regularly provided with instructions on editing overseas requisitions. Previously, ports were expected to edit requisitions in accordance with general policy decisions of ASF headquarters. Under the new procedure, ASF headquarters provided ports with specific information for use in editing overseas requisitions.

One of the most important reports developed during the year within the Army Service Forces was a monthly report on status of supply. In effect this was a monthly inventory, semimonthly for the European theater of operations, showing the status of controlled items of equipment and operational supplies for a theater. Opposite each entry was shown the theater requirement, the number so far shipped, the number en route, the number at the port awaiting shipment, and the number en route to the port. In addition, data were also provided showing the quantities held in depots as well as the numbers being produced. These reports were prepared in the Distribution Division of ASF headquarters from information provided by ports of embarkation and by technical services. They covered the five active theaters of operations. The first such report was prepared in February 1944 for the European theater, and in March for the other theaters. In this way uniform information was provided throughout the ASF by which supply operations might be gauged.

The purpose of all the major developments during the fiscal year 1944 in overseas supply was to insure that every theater had on hand the supplies it needed for the troops with which it had been provided. An excess of supplies was as much to be avoided as shortages, for excesses not only magnified the procurement problems of ASF but also interfered with the shipment of additional men overseas.

CHART 6
OVERSEAS REQUISITIONS
FOR CONTROLLED AND MATERIEL STATUS ITEMS



Logistical Planning

Overseas commanders received strategic directives from the Combined Chiefs of Staff of Great Britain and the United States. Before these directives could be given, however, careful attention was paid to the logistical capabilities for each operation. The Army Service Forces had to determine the number of men and the quantities of supplies which could be moved initially from the United States to overseas bases. Equal attention had to be given to the requirements for continuing support of the forces moved overseas. Many such studies were prepared for the use of the Combined Chiefs of Staff and for the conferences of the President with the British Prime Minister.

Not only did particular attention have to be given to the movement requirements of military operations, but also it was necessary to procure special types of equipment that might be required. Since military operations were frequently planned as long as 18 months in advance, it was usually possible to arrange in ample time for the procurement of the necessary equipment for the troops scheduled to participate. It was not always so simple to insure that special items required by the nature of the operation were provided on time, particularly if the requirements were determined on short notice.

In July 1943, the Joint Chiefs of Staff created a Joint Logistics Committee to direct detailed studies on the logistical implications of projected military operations. In October 1943, the Deputy Director of Plans and Operations became the representative of the Commanding General, ASF on the Joint Logistics Committee. His deputy was the Director of the Planning Division in ASF Headquarters. In this way close and continuing relations were built up between the Army Service Forces and the planning of military operations. Through its representation on the Joint Logistics Committee the Army Service Forces was able to help solve a variety of problems: The programming of munitions requirements, munitions production, the allocation of cargo and troop shipping to various theaters of operations, the programming of lend-lease supply, the establishment of signal communications, the handling of prisoners of war, and the provision of service troops to support combat units overseas.

To assist overseas supply planners as well as those within the Army Service Forces, a considerably revised and enlarged manual on logistical planning and reference data was published in July 1943. This was revised in December 1943 and again in June 1944.

Often military operations had to be undertaken with the equipment that was available whether that quantity was all that might be desired or not. The War Department was informed in September 1943, that if sufficient assault and landing craft had been available to move one additional division from North Africa on to Sicily, the entire operation might have been shortened by 2 weeks and the escape of the Germans prevented. Such limitations were decreasing by the end of the fiscal year 1944. They could never be entirely eliminated.

The Project System

In determining special requirements for equipment such as communications systems, transportation rolling stock, harbor craft and port

facilities, assault craft, and the many other items needed to launch and sustain an amphibious attack, overseas commanders were expected to take an active role. Unless the theater commander anticipated these needs well in advance he was not likely to receive his requirements. When prepared, these estimates were submitted to the Army Service Forces for review to insure that all needs had been anticipated and that requirements could be met.

At first it was difficult to obtain these advance plans and requirements from overseas commanders who were busy with their current combat duties. In the spring of 1943, the Director of Plans and Operations initiated action to encourage overseas commanders to plan their long-range requirements by making necessary bold assumptions in order that the ASF might program schedules of procurement for operational needs.

When supplies were to be landed on beaches, sleds and tractors were needed to move large quantities across soft sands. Crane-rigged tractors had to be ample to unload the barges and to unload trucks on shores. Motor transportation had to be adequate to clear the beaches of an accumulation of supplies. When the enemy was driven from hostile shores, shelter had to be provided for troops as rapidly as possible; hospitals had to be constructed; prisoner of war camps erected; communication lines established; the local water supply had to be repaired, expanded, and usually treated in order to prevent the spread of disease; sewage facilities had to be provided. As an operation progressed, roads and railroads had to be provided. At an early stage in every operation, first landing strips for fighter planes and then airfields for bombers had to be built. Originally, landing mats were used for these purposes, but as soon as possible they were replaced by more durable paved surfaces. Air fields required fuel installations including pipe lines, pumps, and storage tanks. As troops moved forward, depots and warehouses had to follow. For example, a force of 500,000 men required at least 4 million square feet of open storage space and 3½ million square feet of covered storage space for its supplies. Motor vehicles shipped unassembled in order to conserve transportation space required assembly facilities.

To insure that all requirements for logistical supplies were provided in ample time the Army Service Forces originated the project system. Overseas commanders were requested to submit specific projects for specific phases of an anticipated military operation. These projects could then be reviewed in ASF headquarters and the proper steps taken to insure inclusion of these supplies in the procurement program. For example, ASF headquarters, on 12 August 1943, received a project from the European theater of operations for the reconstruction of the port of Cherbourg. The overseas commander estimated that the port would be systematically destroyed by the Germans as was the case later at Naples. The theater indicated the numbers of men and tons of supplies it hoped to unload at Cherbourg. This meant berthing space for a certain number of ships and lighterage capacity for others. The project included requirements for construction materials, cranes, barges, dock equipment, and warehouses. Procurement directives were issued by the ASF on 23 August 1943 to provide these supplies. All the necessary equipment was in the United Kingdom before the invasion of France began on 6 June 1944. For

various phases of the European invasion the ASF, prior to the start of the actual operation, had received a total of 219 projects with 113 amendments or supplements.

Although a theater might be prompt in its submission of operational requirements, the Army Service Forces could not guarantee their shipment at the appropriate time. Shipments depended upon priorities established by the Joint Chiefs of Staff. Thus it was entirely possible that a theater with a low shipping priority might lose its supplies at the last minute, even though it had done everything possible to insure the availability of those supplies. For example, early in 1943 the China-Burma-India theater initiated a requirement for several thousand truck trailers to be used on the Ledo Road. Much later the European theater of operations, with a higher supply priority, presented an immediate requirement for truck trailers. The result was that the requirements for the European operation were met first. Actually no hardship was occasioned for the China-Burma-India theater, since the Ledo Road had not been completed and the Burma Road was not yet open.

War Department Circular No. 220 in September 1943, provided that operational projects would not be submitted for items of supply and equipment desired within 90 days of submission. This stipulation was necessary because theaters were submitting projects at the last minute. In this way the project in effect amounted to a requisition which instead of going to the port of embarkation went directly to the War Department. These requirements were received so late that often the ASF had to take supplies destined for other theaters in order to meet demands with a high priority. This interfered with orderly procurement and issue.

When submitted, an operational project was cleared through the General Staff and the necessary procurement directives issued. Ports were notified of approved projects and of the quantities and types of supplies to be shipped. On 22 November 1943, ASF Headquarters directed all ports of embarkation to prepare a monthly report indicating the status of shipment for operational projects.

The Army Service Forces continued in 1944 to perform much of the planning for operational projects. Staff officers in the Army Service Forces had more time and more facilities for completing details, and frequently they received information about contemplated military operations farther in advance than some theater staffs. At the end of the fiscal year, accordingly, there was a tendency for the War Department to assume more and more responsibility for the preparation of operational projects and for seeing that these requirements were included in the procurement program.

Because of the mischances of war no advance plans could ever completely meet the situations which actually arose. In consequence, there were always cabled requests for emergency items to meet operational needs. These were filled by the Army Service Forces within the limits of theater supply priorities and within the limits of available supply in the United States.

Ports of Embarkation gave final approval to overseas requisitions only when the amounts needed were within authorized allowances. Otherwise, the port forwarded the requests to chiefs of technical services, with a copy to ASF headquarters. If the requirement was

urgent, it was handled by wire or telephone. Chiefs of technical services did not take action on these unusual requests if their supply would adversely affect other commitments. When unusually large amounts were involved, when requisitions affected critical items of supply, or when disapproval was recommended by a technical service, the matter was handled by the Director of Supply in ASF Headquarters. Urgent requisitions were also received directly in ASF Headquarters from overseas. As far as possible, direct submission of requisitions was discouraged; it could not be eliminated.

Preshipment

Overseas supplies might be shipped "combat loaded" or "convoy loaded." When troops expected to disembark on hostile shores, they had to be loaded with their equipment and ammunition ready to engage the enemy upon landing. Wherever possible, vessels were convoy loaded since this has permitted more efficient shipment of both men and supplies. Many shipments of troops for Pacific bases were combat loaded whenever there was reason to keep units and equipment together. These units, on arrival at a Pacific base, were transhipped in smaller vessels to the combat zone. For this reason it was necessary to keep men and their equipment together.

For shipments to Atlantic bases, however, it was found preferable to send troops with practically no equipment in fast transports while guns, trucks, and other equipment followed in slow cargo convoys. Fast transports were able to use their speed to avoid submarines. The rapid loading and unloading of troops was possible when little equipment was loaded, and a frequent cycle of trips for such vessels could be scheduled. The loading of equipment on slow cargo vessels meant economic use of holds and deck space. In "commercial" or "convoy" loading the supplies and equipment for any one ship's cargo were selected with a primary concern for filling the cubic content of the ship and utilizing all available deck space.

Prior to the fiscal year 1944 it was the general policy of the War Department to move troops and equipment across the Atlantic at approximately the same time. The equipment was later assembled by the supply organization in the theater of operations and dispatched to the area where the troops were quartered. The disadvantage in this system was that equipment was necessarily delayed. Troops did not receive it until they had been in the theater from 30 to 60 days. Training thus suffered a severe interruption. For these reasons the Army Service Forces sought to devise a system of preshipment whereby troops would turn in their equipment on leaving the United States and get new equipment immediately upon arrival overseas. This system was put into effect at the beginning of the fiscal year 1944.

There were certain difficulties that had to be overcome. One of these was in having available overseas sufficient service troops to receive, store, and distribute preshipped equipment. One previous effort at preshipment in 1942 was not very successful because of the lack of service troops overseas to handle the equipment received. Another major difficulty was scarcity of equipment. A third difficulty was accurate forecasting of the types of troops which would actually be dispatched overseas. The wrong proportion of such equipment as tanks, tank destroyers, and antiaircraft guns had to be avoided.

There were two major advantages in preshipment. At the beginning of the fiscal year 1944 a sizable amount of cargo space was available to the Army Service Forces. This cargo shipping was capable of moving more supplies than were needed to support the existing number of troops overseas. In the second place, when troops did arrive overseas they might receive their equipment without any delay. Another advantage was the use of the long daylight hours of summer for loading in the United States and for unloading in England.

Preshipment of supplies and equipment to the European theater of operations was begun in June 1943, and continued without interruption. In large part the ships were filled with supplies moving directly from production plants, although depot stocks were used occasionally. At one time it was necessary to weigh the advantages of preshipment against those of assigning a larger percentage of equipment to troops in training in the United States. In November the Joint Chiefs of Staff decided that higher priorities should be granted for preshipment than for training. In large measure the eventual successful movement of the force reaching England before 6 June 1944 was achieved as a result of the preshipment program. If it had been necessary to ship the equipment of field forces at the same time the troops were moving overseas, much of the last minute additional requirements submitted by the theater could never have been shipped. In fact, limitations of cargo space would have prevented the movement of all the troops which were dispatched to England between 1 January and 30 June 1944.

On several occasions when divisions moved from the Central Pacific to the South or Southwest Pacific areas their places were taken by divisions shipped from the United States. Rather than move each division with its full organizational equipment, the ASF found it advantageous to preship supplies to the Central Pacific and to the South Pacific. In this way as a division left the Central Pacific base it traveled with minimum essential equipment and received its full authorized allowance upon arrival in the South Pacific. In turn, divisions leaving the United States traveled with their minimum essential equipment and used that available in the Central Pacific during their stay there. In this way considerable shipping space was saved and larger troop movements into the Pacific made possible.

Officially the work of the Army Service Forces was completed when supplies were loaded on ships at a United States port and the cargo delivered to overseas ports. The unloading of the vessel, its return to the United States, the storage of supplies overseas, the distribution of supplies to troop units, the operation of Army installations overseas, the overseas medical service, communications within the theater, construction activities, pay of the troops, and all the other jobs the Army Service Forces did in the United States were performed by the supply and service organization of the theater commander. In large measure, the overseas supply and administrative system was modeled on that of the Army Service Forces. More than that, the theater was dependent upon the equipment it received from the United States and upon the supply and service personnel trained by the Army Service Forces for overseas assignment.

In consequence, the informal relations between the Army Service Forces in the United States and the supply forces overseas were very

close. The Army Service Forces had to be prepared at all times to provide the theater commander with the answers to his logistical needs.

One way to understand the interrelationship of the Army Service Forces and the theaters of operations is to recount what happened in the past fiscal year in the theaters themselves. In turn, the Army Service Forces took pride in the accomplishments of every single supply and service organization overseas.

The European Theater.

The greatest single problem for the Army Service Forces during the fiscal year 1944, of course, was fulfilling the needs of the American forces, and in part those of the British troops, scheduled to invade France under General Eisenhower. In the summer of 1943 the Army Service Forces were given their objectives: To place a minimum of 1½ million men in England by D-day with all their necessary equipment; to provide the supplies necessary for their maintenance; to provide the equipment and materials needed to land supplies in France, except such as were a responsibility of the Navy, and to keep supplies flowing to the troops once they had landed; and to provide adequate inventories of supplies in England from which the invasion troops might draw their support. Those objectives were met.

A backlog of available cargo in the United States steadily developed after 1 January 1944, because of the inability of British ports to unload larger quantities. British ports at this time had to handle not only the in-flow of cargo but also the loading of troops and supplies for the movement to Normandy. By June nearly 1 million measurement tons (40 cubic feet per ton) of supplies, the equivalent of 100 shiploads, were ready at eastern ports. Most of this was equipment and supplies needed after the invasion got under way.

Two steps were taken by the Army Service Forces in the United States to ease the pressure upon the ports of the United Kingdom. The number of scheduled sailings was reduced from 120 to about 100 ships per month, and the amount loaded on each ship was increased to the limit. Individual ships were loaded solidly with a single item, such as rations, clothing, lumber, or ammunition. These ships served as floating warehouses and were subject to discharge as circumstances permitted. The decks of tankers were also fully loaded, generally with aircraft and bulky items. They carried on their decks each month supplies equivalent to the contents of 25 cargo vessels.

In May and June 54 ships were loaded with food, ammunition, and equipment specified by General Eisenhower's headquarters. These ships were never intended to be unloaded in England. They were despatched overseas, held in British waters, and then moved directly to the Normandy beaches for discharge. This saved four handlings in the United Kingdom, eased the pressure on ports, railroads, and depots, and provided immediate supplies for the invasion troops.

At the end of March 1944 the principal supply officers of the European theater of operations returned to this country at the invitation of the ASF to review the whole supply picture for the coming invasion.

These officers sat down with the supply officers of ASF. The status of each important item was investigated and possible substitutes were considered. For the shortage items jeopardizing the success of the

invasion the quantity needed and a dead-line date of its supply were set up. This was called the critical item list, and was drawn up on 4 April. A report on these short items was published weekly and dispatched to England by air courier. Production schedules, rail shipments, port receipt, and port loading of these items were followed day by day.

The first report on the critical item list was made on 15 April. There were 124 items on the list at that time. In the next 7 weeks the European theater added 86 new items. The final report on 27 May showed 57 items not yet fully shipped, but only 6 items on which the dead line promised the theater by the ASF had not been met. Those 6 items were later supplied as promised.

On 5 April the Director of Plans and Operations, with a small group of assistants, went to England to check the supply situation there and to make doubly sure that the invasion forces had everything they needed. He visited the troops in concentration areas and checked depots and ports. He went over supply problems with the responsible officers, including the Theater Commander. Last-minute needs were phoned back to the United States. When 6 June 1944 arrived, the ASF was satisfied that it had done everything possible in its sphere to make the invasion a success.

But no matter how careful the advance planning for military operations might be, there were always last-minute supply needs which the Army Service Forces had to meet. The strategic situation might alter or information might be received which changed the plans for a military operation, or some oversight in the preparations might be discovered. Several such incidents occurred in preparing for the invasion of France.

On 7 April a request was received from England for 30,000 rounds of smoke shells of a special type for the 105-mm. howitzer. These smoke shells were a new development still in the experimental stage, and were not scheduled to go into production until October 1944. The European theater of operations wanted 30,000 rounds by 15 May. Smoke shells assisted an artillery spotter in identifying the spot where shells from his battery were landing. The ASF standardized four colors by 12 April and sent the orders out by telephone and teletype. Canisters and dyes were diverted from chemical warfare production and sent by rail express to Aberdeen, Md. The shells were loaded by hand at the Aberdeen Proving Grounds by women workers. They worked overtime and in multiple shifts to get the job done. The last shell was filled, packed, and shipped to the port on 2 May—just 21 days after the order was received.

The request for 105-mm. smoke shells was accompanied by a request for smoke shells for the 3-inch gun. Twenty-five thousand rounds were wanted. The Ordnance Department decided that it could use 25,000 projectiles of an obsolete type which were on hand already loaded, if the rotating bands were recut to meet the new requirement. Those bands were hand cut while the shell was loaded—an extremely dangerous job—because the heat in cutting might have ignited the explosive in the shell. The job was done without accident, and the shells were shipped by 30 April.

The ASF developed a new mine exploding device early in the calendar year 1944, of which 50 were scheduled to be sent to England between the 15th of May and the 15th of June. On 15 May General

Eisenhower asked for the original 50 plus 20 more at once. Thirty-one were shipped by a fast convoy on 22 May—just 7 days later—and the remaining 39 were shipped by 28 May on the fastest available ships. Each of these 70 mine exploders weighed 30 tons and took up much space. When this order to ship reached Chester, Pa., the extra 20 mine exploders were not even assembled. None of them was completely waterproofed. At the port of New York shipping schedules and stowage plans worked out in advance had to be put aside and rearranged. All this was done and seventy 30-ton monsters went overseas in less than 2 weeks after the order. The whole movement was secret, because this mine exploder was new and had never been used against the enemy.

A radio from England on 18 May 1944 stated an urgent need for 13 different spare parts for the 4.2-inch chemical mortar; front and rear springs were the principal parts. Some 4,500 of these parts were wanted. Another radio came in on 23 May saying that 400 of the springs were wanted at once. A chemical warfare depot delivered 1,000 springs to La Guardia Field by midnight 25 May, and all remaining parts were flown out of the United States by 27 May.

On Sunday, 7 May 1944, ASF headquarters was informed by supply officers in England by telephone that two air-borne divisions would have to have 100-percent reequipment. As far as possible the reequipment would be provided from stocks on hand, but some assistance was needed from the United States. A list of shortages was promised by Wednesday; all the equipment had to be in England by 1 June. Each technical service was immediately notified that two air-borne divisions would have to be reequipped, although the exact amounts were not yet known. Using the table of equipment for an airborne division as a guide, each service notified its depots to be ready to ship any of these items on a last-minute notice.

The list of requirements for the European theater was received on 10 May. It contained 214 items, involving a quantity of 327,272 units. This list was divided as follows:

	<i>Item</i>	<i>Quantity</i>
Signal.....	66	13, 522
Engineer.....	45	16, 564
Chemical warfare.....	22	24, 026
Medical.....	14	748
Ordnance.....	58	19, 677
Quartermaster.....	9	252, 735

The Army Service Forces set a deadline of 14 May for arrival of the shipment in port. Supplies began to move that night all over the United States by rail, by express, by army truck, by commercial truck, and by air. Every step in the movement was followed from point to point. No bottlenecks were permitted. As each shipment arrived near the port of New York, it was given an open switch and was escorted to the loading platforms of a fast-moving convoy scheduled to be in England before 1 June. Ninety-nine percent of the equipment made the convoy. Only one shipment was lost, and it was relaced by another one flown in by air. Only a single item—helmet liners—couldn't be delivered in time. Space for the helmet liners was then reserved in one of the fast-troop carriers that travels without convoy. It arrived in England before 1 June, meeting the deadline.

These examples of feverish supply activity were not uncommon. Yet they should not obscure the more routine dispatch of supplies on regular schedule which accounted for the great bulk of ASF activity. The unusual request could be met only because the usual supplies were flowing from the depots to ports to overseas bases on a steadily mounting scale.

North African Theater

When the fiscal year began, the Allies in North Africa had just completed the campaign in Tunisia which eliminated the last Axis forces from that continent. On 1 July 1943, there were trains and trucks rumbling along 1,000 miles of supply lines from Casablanca to Bizerte, and in the East 1,300 miles from Alexandria and Cairo across Egypt and Libya. Supplies were hauled these full distances because the Mediterranean ports were jammed with preparations for the coming assaults against Europe.

During the period of this report the North African theater launched three major amphibious assaults against the enemy—first on Sicily on 10 July 1943, then at Salerno on 9 September, and at Anzio on 22 January 1944. At the end of the year plans were completed for the fourth such major operation, the landings in southern France on 15 August.

Amphibious operations are costly in equipment. Landing troops, their weapons, and supplies over beaches meant tractors, trucks, and all kinds of landing craft large and small. Losses could not be avoided. Constant use under adverse conditions resulted in rapid deterioration. Until the reconstruction of Naples, most supplies had to be transported from various North African ports, each of which needed adequate inventories.

In order to reduce the use of ships in moving supplies between bases in North Africa, the capacity of the French railway system there was increased by the manufacture in this country of rail equipment of French design and by the management and operation of these lines by American personnel.

Supplies to support 1 million men were being despatched to the Mediterranean by the end of the fiscal year. The cargoes hauled in this 1 year to that theater exceeded those shipped from the United States to France from May 1917 to April 1919, during World War I, by 5½ million tons.

Southwest Pacific

While one Axis partner capitulated and the Germans were driven back in Europe, the Army Service Forces were equally concerned with the war against the Japanese. In terms of vessels assigned, the Southwest Pacific theater under General MacArthur's command led the North African theater and was second only to the European theater. Australia and New Guinea were the scene of these operations.

By the start of the year covered by this report the strategic situation to the Southwest Pacific had altered. General MacArthur had accomplished the initial mission assigned him—to turn back the Japanese advance from the north toward Australia. He was ready to take the offensive up the coast of New Guinea toward the Philippines.

The experience of the Buna campaign indicated however, that the type of warfare originally projected against the Japanese was inadequate for the task and unsuited to American methods and temperament. Like the enemy, our forces had been equipped with light, mobile equipment. Such troops could move through the jungle, infiltrating behind opposing lines and surprising individual parties of the enemy. But an assault upon intrenched positions was costly in lives, and decisive defeat of the enemy would require an inordinately long time. Accordingly, new tactics based on our superiority in matériel were adopted by the theater. These tactics called for overwhelming weight in the air, in machines and firepower, with a campaign designed to obtain major operating bases on the road to the Philippines which would secure our own advance but leave the enemy isolated in the jungle.

This decision made obsolete some of the equipment already furnished and projected for the Southwest Pacific. The use of heavier equipment meant changes in the procurement program and greater tonnages to be transported. It involved more facilities in the theater for handling supplies, more amphibious equipment, and more spare parts and other maintenance supplies. In short, operations in the Southwest Pacific became a problem of heavy supply for the Army Service Forces.

As the campaign progressed, new bases were built along the New Guinea coast. By 30 June 1944 the success of tactics based upon overwhelming supply had been amply demonstrated.

Distances and the complete reliance upon water transportation was, of course, the greatest single obstacle to supply of the Southwest Pacific. From Brisbane, the major base in Australia, to Port Moresby in New Guinea, our first forward supply point, was as far as from Miami, Fla., to Quebec. The demands for ships and other transportation equipment were insatiable.

Tugs, lighters, barges, cranes, and tankers were produced and despatched at once to the theater. Motors for small boats of 70 and 80 deadweight tons were made and shipped for vessels constructed in Australia. As more shipping became available, freighters were assigned in larger numbers to local supply operations, so that smaller craft might be used exclusively in assaults upon new points.

As base facilities became available in New Guinea, the Army Service Forces loaded vessels out of the United States directly to points along the coast to lessen the transshipment burden. Fourteen docks were built at Milne Bay; 12 at Finschafen, 10 at Hollandia. From time to time, General MacArthur sent representatives to the San Francisco port of embarkation to advise on the loading of ships to proceed straight to New Guinea. For example, ships with supplies for construction of necessary facilities at Hollandia cleared San Francisco directly for Hollandia even before General MacArthur's troops had actually landed.

South Pacific

At the beginning of the fiscal year, a separate command directed the campaign to push back the Japanese from the Solomon Islands, New Georgia, and New Britain. Active combat operations in the South Pacific Theater came to an end with the occupation of Green Island in the Solomons on 14 February 1944. The major effort of

the year was the assault upon Bougainville on 1 November 1943, which followed the landings on New Georgia on 30 June. Airfields, roads, and storage facilities were constructed on Bougainville, which enabled the American forces to neutralize all Japanese operations on the island as well as at Rabaul by periodic attack from the air.

The cessation of assault efforts did not end the supply problem of the Army Service Forces for this theater. From 52,000 measurement tons of cargo shipped to the area in July 1943, the total expanded to a peak of 311,000 tons in May 1944. These large shipments were required to reequip the forces in the theater for service with General MacArthur, and for supplying forces withdrawn from combat in the Central Pacific area.

Central Pacific

Joint Army-Navy supply planning for the westward advance from Honolulu toward the Philippines began in July 1943. It was agreed that the Army would provide all food needs for shore-based personnel of both services, the necessary hospital facilities, the communications system, water supply installations, all covered storage space, and a large part of the supplies for ports, airfields, roads, and fortifications. Since these attacks were to proceed concurrently with amphibious assaults elsewhere in the Pacific, it was necessary to plan shipments of necessary supplies with great care.

In October 1943, supplies despatched to the Central Pacific were four times greater than the previous average monthly shipment. Successful landings were made on Tarawa, Makin, and Agamama in late November. Cargo shipments reached a new high in January 1944—the assault upon Kwajalein and Eniwetok in the Marshall Islands occurred in February.

In May 1944, the Army Service Forces shipped 312,000 tons of supplies to the Central Pacific—the record high of the year and 25 percent more than in October 1943. The conquest of Saipan began on 15 June. This time the Army was allotted an even larger share of projected airfield and dock construction. Before the attack began, indeed, plans for bombing facilities were tripled. The necessary construction machinery was drawn from all over the United States, including current construction projects, and sent to the Central Pacific.

Throughout these campaigns the Army Service Forces were hard pushed to meet operational needs. At no time, however, were attacks delayed for lack of supplies, and construction activities subsequent to each conquest proceeded rapidly.

China-Burma-India

No theater where American troops were stationed presented more complicated supply problems than China-Burma-India. The obstacles included not only long distances, inadequate transportation facilities, and almost insurmountable conditions of climate and terrain, but also complex psychological and political patterns among the Indian and Chinese people. Nonetheless, supply to this distant area substantially improved during the year.

Shipments kept pace with the progress made in opening a new supply route into China. This undertaking was twofold—a new highway and pipe line from Northeast Assam to connect with the

old Burma Road west of Paoshan, and a system of airdromes from India to China. An expansion in the size of the air forces and in the number of planes was necessary to increase the supplies carried by air across the Himalayas into China.

Decisions made at Quebec in 1943 to increase the supply capacity by air and land into China more than doubled the requirements for service troops, equipment, and materials in the theater. Additional pipe lines were needed, for example, since the first projected lines would now be sufficient to supply the larger number of cargo trucks planned for use on the Ledo Road from Northeast Assam to a junction with the old Burma Road West of Paoshan.

During the first few months of the fiscal year, it proved impossible to increase the carrying capacity of the Bengal-Assam railway system hauling supplies to the head of the Ledo Road. This system consisted of a standard gauge road, a meter gauge line, and a ferry across the Brahmaputra River. Railway troops provided by the Army Service Forces took over full operation of the meter gauge part of the line on 1 March 1944. By the end of the year the system was handling all tonnage offered, with a 10 percent excess capacity.

The Air Transport Command by June 1944 was flying nearly 16,000 tons of supplies into China, about five times more than in the previous July—and further increases were in sight. By the end of the year surfacing on the Ledo Road was complete to mile 160, and final grading to mile 166; the survey party had reached mile 221. Eventually, the road must extend a total of 500 miles over virgin jungle, paddy fields, and torrential streams to reach the China border.

Of all supplies shipped by the Army Service Forces to the China-Burma-India theater, 58 percent have been Army Service Forces procured items for the construction of the new routes into China and for the support of American Army troops.

Shipping time to the China-Burma-India theater was twice that to the Southwest Pacific and nearly four times that to the European theater.

Iran

The Persian Gulf Service Command was maintained by the Army for the movement of lend-lease supplies through the Persian corridor to Russia. Supplies were unloaded at ports along the Persian Gulf and shipped north 700 miles to Teheran, where they were turned over to the Russians for movement to their ultimate destination. The facilities operated and maintained included four ports, three truck assembly plants, one aircraft assembly plant, the railway line from the Gulf to Teheran, a truck route, motor repair shops, and storage depots. The 29,000 troops under the command were entirely service troops. About 58,000 native employees were also hired.

At the beginning of the year the Persian Gulf Service Command was handling 146,000 tons of cargo a month. In December 1943, the traffic had mounted to 245,000 tons. During March, April, and May of 1944 shipping by the Army Service Forces dropped because of the cargo needs of the European Theater of Operations just before the invasion of Normandy but by June the tonnage landed in the Persian Gulf was up to the high point of 253,000 tons. At that time about 56 percent of

the supplies landed were moved to Teheran by rail, and the remainder mostly by truck.

Procedure for Oversea Shipments

As the overseas supply system moved to a requisition basis, the procedure for prompt handling of requisitions in the United States became more and more important. Behind each port of embarkation the technical services of ASF maintained filler depots to provide requisitioned supplies. Other depots carried shortage items or those demanding central storage. It was essential that supplies move without delay from depots to ports for convoy loading.

At the beginning of the fiscal year there were numerous complaints about delays in shipping needed supplies overseas. Particular difficulties were encountered in supplying the Pacific theaters. The faults were several: requisitions were often received with impossible deadlines, many desired items were still in critical short supply, and the distance from the sources of production made it more difficult to stock Pacific coast depots. At the same time it was evident that the procedure for handling requisitions should not further complicate or delay supply operations.

On a second trip to the Pacific in 1943, the Director of Plans and Operations found that delays in supply were occurring. The Army Service Forces in October 1943 began a series of surveys of overseas requisitioning procedure. These studies were started at the San Francisco port and then were made at the other major ports. Many deficiencies were uncovered. From March 1942 through September 1943 a total of 15,977 requisitions had been received by the San Francisco port of embarkation. Of these, on 1 October 1943, 60 percent were completed and 40 percent were still active; 15 percent were more than 90 days old. The port had more than 2,400 requisitions more than 90 days old. On 30 September, 58 percent of the Engineer requisitions, 55 percent of the Ordnance requisitions, and 53 percent of the Signal requisitions received during June were still incompletely filled. While some of these remained incomplete because of inconsequential quantities or minor items, it was still evident that theaters were short their desired supplies.

Another fact discovered was that the overseas theaters themselves were not well informed about the status of their supplies. Pacific theaters were asked to forward typical delinquent requisitions. Of some 241 sent to ASF headquarters, port records showed that 30 percent had been completed in their entirety, and another 2 percent had been canceled.

In considerable part the deficiencies in overseas supply could be traced to procedural complications. Many requisitions were dormant for months without tracer action. The port was ignorant of the status of the supply action being taken by the depot to which the requisition was sent. Because of the inadequacy of stocks on the west coast, a tremendous volume of paper work arose in seeking supplies from sources within the interior. Requisitions were extracted, re-extracted, and backordered. In some instances no action was taken at all. Port time objectives were lost sight of, loose record-keeping was found at many different places. A disproportionate share of the interval

elapsing between the submission of a requisition and delivery of supplies was expended in processing papers. There was a lack of close relationship between ports and sources of supply. Follow-up throughout the whole system was lacking. These situations were found to exist not only on the west coast but elsewhere.

The deficiencies revealed by these surveys led to extensive corrective action to improve the overseas supply system. The experience gained by the New York port of embarkation in supporting the European and North African theaters was used as a guide. A master standard operating procedure for shipment to overseas theaters resulted. This procedure provided for the synchronization of the flow of supplies in accordance with a definite time schedule. When the port was informed of availability the supplies were called into the port area for loading on a specific convoy or were called in during a specific shipping period. Requisitions which called for deliveries at future dates were held for the convoy or shipment period corresponding to the desired delivery date. This system was not only the best means of insuring the timely arrival of supplies overseas, but also provided a sound basis for cargo planning and a definite schedule for tracer action.

This procedure assigned to each of the agencies involved in the overseas supply process a definite time interval for accomplishing its task. There was thus:

- a. A period for dispatching requisitions from the port to depots or to ASF headquarters.
- b. A 10-day period for the supply depot to notify the port of availability or to report action taken.
- c. A 7-day period in which shipments would be made immediately available.
- d. A 10-day period for shipment to ports.
- e. A 15-day period for loading.

This practice was referred to as the "date-line" or "shipping period cycle" system. Its essence was a shipping period cycle of 15 days, coupled with cargo planning. This procedure was adopted by all ports of embarkation in January 1944.

The periods of time allotted for certain operations varied with the ports. On the west coast the period for transmission of requisitions and shipments of supplies was somewhat longer. Each port followed requisitions closely through their processing by supply sources. The extract requisitions indicated when a report of availability was desired and when shipments should be ready, in addition to indicating the markings and port to which shipments should be made. As a shipping period approached, cargo estimates were refined on the basis of available information. Finally, requisitions not filled within 90 days of the limiting date for supplies to arrive at the port were returned to oversea commanders with a request to review the unsupplied items and to concur in the cancellation of any items no longer required. Requisition files were maintained on a standard basis in each port of embarkation.

By employing the semiautomatic method of cancellation and by expediting supply action on delinquent requisitions, the backlogs in overseas supply were considerably reduced. One port of embarkation was able to relieve its records of over 1,000 requisitions, while another

port was able to cancel 4,500 overage requisitions. Much unnecessary paper work was eliminated at ports and at depots all over the country.

To guide depots in processing oversea requisitions, ASF Manual M 411 was issued in tentative form in March 1944. This manual set up one simplified standardized procedure for processing overseas requisitions received from ports. Each technical service was directed to assign responsibility for the support of each port to one or more initial sources of supply. If the initial source of supply could not set up items for shipment on or before the limiting date, it should be necessary to extract the requisition only once to a secondary source of supply. For this system to operate satisfactorily, each service had to maintain at one place up-to-date stock records covering the entire available supply within the United States of a particular item. Uniform methods for dispatching an advice of availability, an advice of shortage, and for extracting requisitions were provided. The result of this new system was to reduce greatly the amount of paper work required in handling oversea supply requisitions. It enabled ports of embarkation to plan shipping requirements and cargo loading. It simplified the entire system of oversea supply at a time when the Army Service Forces was approaching its peak loads. These procedural improvements were reflected in improved performance in meeting oversea supply demands.

Stocking of West Coast Depots

As already mentioned, some delay in the supply of Pacific theaters was occasioned by the distance which separated the port of San Francisco from the majority of depots in the Zone of the Interior. The stocks in the filler depots were limited both in size and in the number of items usually carried. It became evident that both the port stocks and those of the filler depots must be built up in order to eliminate a lag in delivery. After a trial period the San Francisco Port of Embarkation was in effect set up as a filler depot on 29 November 1943. The port was permitted to maintain a 90-day working stock for all items except controlled items of equipment or items included on the matériel status report. Replenishment of port stocks was automatically performed by chiefs of technical services based upon status reports submitted by the port. The purpose of setting up these port stocks was to improve the flow of supplies from the San Francisco port into Pacific bases.

The building up of filler depot stocks behind the port was necessarily gradual. The original survey in October 1943 indicated that only about 70 percent of the items ordered by San Francisco from filler depots were supplied. By December west coast depots were filling approximately 75 percent of all items requested, and by June 1944 they were filling over 80 percent.

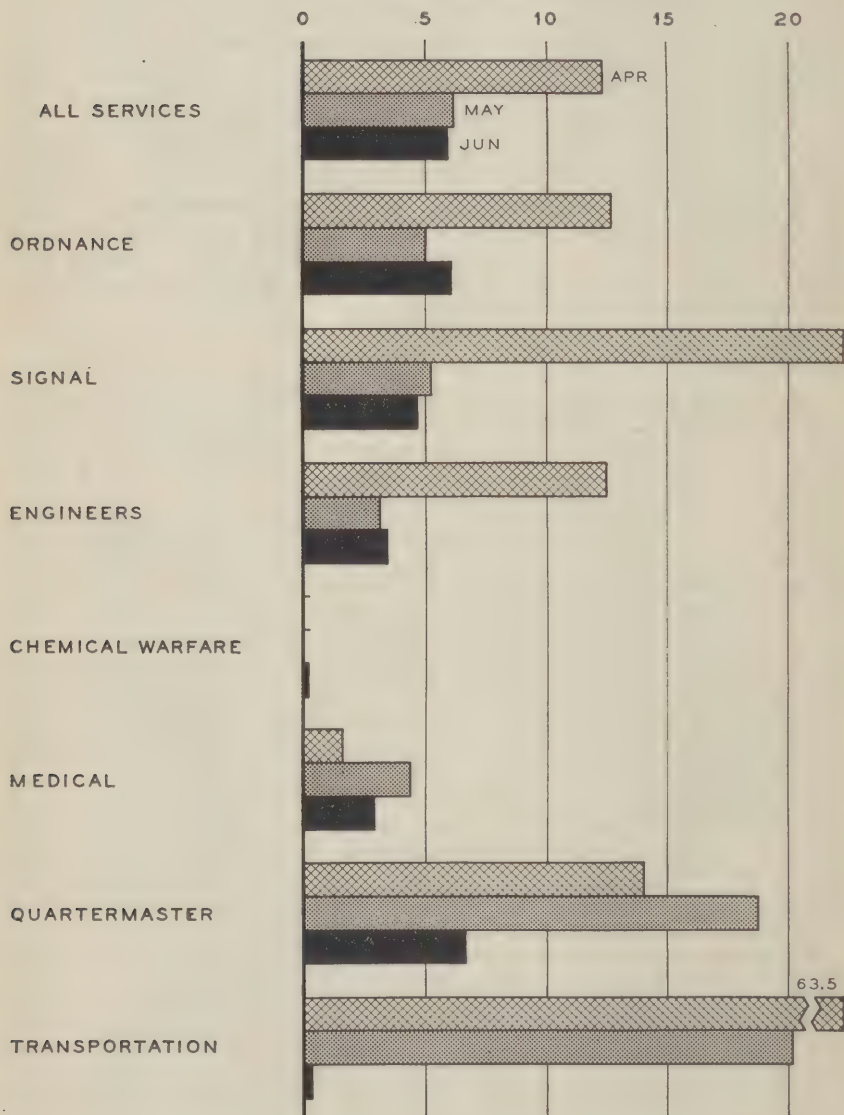
Stocking west coast filler depots with fast-moving items depended upon clearing the depots of slow-moving and unnecessary stocks. No additional construction of storage space was desired. This clearing-out process was well under way by the end of the fiscal year, over a million square feet having been freed.

Port reserve stocks were not held in east coast ports of embarkation, since the network of storage facilities in the east made this unneces-

CHART 7

REQUISITIONED SUPPLIES SHIPPED LATE TO PORTS

PERCENT OVERSEAS LINE ITEMS
SENT AFTER LIMITING DATE



sary. Port reserves there were abolished in July 1943. This meant that many slow-moving items were no longer stored in ports.

For all ports of embarkation there was a steady increase in the proportion of supplies shipped immediately to the port by filler depots. In October 1943, 78 percent of all requisitions received were shipped by filler depots; in June 1944, the proportion was over 85 percent.

Identification of Shipments

In the early months of the war, overseas bases had much difficulty in telling just what supplies and equipment were being sent them in response to requisitions. The loading cable dispatched when the convoy sailed told only the tons of the various classes of supply. The ships' manifests were supposed to give the detailed list of the cargo, but, until the practice of flying these to the theater was instituted, they arrived too late to be of any use. Theater commanders not only had to plan disposition of the cargo when it arrived, but they had to make plans based upon what was coming. Even when manifests were flown to the theater, the problem was not solved. The preparation of the manifests was generally delayed, and air transport was unreliable. Weather kept planes grounded for long periods.

After the overseas port commander received the manifests, he had much work to do. First, he had to break the manifests down by services in order to determine the depots to which the supplies and equipment would be sent, and then he had to make plans for transport of the shipments to depots. In England the situation was particularly acute. The tight rail situation necessitated that requests for rail transportation be placed well in advance, depots were small and scattered, and British regulations required that cargo be cleared from the docks within 24 hours. An added complication was the necessity, when the radio silence of a convoy was ended, of ordering the vessels to ports nearest the warehouses to which the majority of the cargo was destined. This was impossible unless the contents of the ships were known in advance.

During the fiscal year 1943 a number of steps were taken to enable overseas theaters to identify shipments. The first such step was the preparation of supply lists by technical services. At the New York port copies of tally sheets were sent to each technical service officer on the port staff who prepared a separate list of the supplies while they were being loaded. Thus, for example, an ordnance list was drawn up indicating all ordnance items on each of the ships in the convoy. When this list was received overseas, it enabled the ordnance officer there to plan the disposition of all ordnance supplies arriving in a convoy. These lists were prepared for each technical service. This practice was extended to all ports of embarkation in January 1944. Another step taken in the fiscal year 1944 was to establish a 24-hour deadline for the dispatch of manifests after a convoy sailed. In this way more manifests reach overseas ports before the actual arrival of convoys.

There were still other problems to solve. Overseas supply officers wished to know whether the items being received were a total or partial shipment in response to a requisition. They had to identify component parts readily in order to dispatch them to appropriate assembly plants. They also needed a method for relating the shipment to the requisition which had been dispatched to the United States. If shipments could

be coded, information about them might be wired to a theater when air communication was grounded.

At the beginning of the fiscal year 1944 the Army Service Forces introduced the War Department Shipping Document as a single form accompanying all supply movements. This document provided a space for recapitulation of the shipment at the port; copies could then be sent overseas by air from the port. One shipping document was used for each shipment. It permitted a shipment to move through all transportation channels and still be handled as a unit. There was no fear that components of a single shipment might thus be separated before arrival at destination.

The problem of relating requisitions to shipments was solved in October 1943 by the adoption of a procedure known as I. S. S. (Identification of Separate Shipments). Coded symbols were established to identify a requisition. This symbol was forwarded to the port filling the order, marked on the package, included in the shipping document, and transmitted by shipping document and manifest to the overseas theater. A month later a refinement was added: a symbol was included showing the time priority of the shipment. Where convoys sailed at regular intervals, as from the United States to the United Kingdom, the overseas commander thus knew the 15-day period in which the item would be loaded. Another improvement was introduced in June 1944. Those supplies which were to be kept together during the in-transit period were given combination codes.

Identification coding indicated, first, the overseas port of debarkation, the time period in which the shipment would leave the United States, the technical service and class of supply (I, II, III, IV, and V), project identification, requisition number, depot of origin, and number of units in the shipment. An intense educational program was begun in depots, ports, and shipping agencies to acquaint all personnel with the identification procedure. Pamphlets, films, and film strips were used in this training endeavor. The result was that by the end of the fiscal year code markings had solved the problem of the oversea commander in identifying his shipments and consigning them to the proper points.

Another standard procedure was introduced in March 1944 for transmitting to overseas theaters advance information about supply shipments. War Department Manual TM 38-412 prescribed a method of using the shipping document with the ocean manifest to supply all necessary information to transportation and supply agencies overseas. A transportation manifest was prepared from the shipping documents and listed the recapitulation of the shipment. Copies of the War Department shipping document affixed to the transportation manifest provided all supply agencies with their necessary information. This combination of transportation manifest and shipping document was known as the supply manifest. This procedure made it unnecessary to provide detailed supply data on the transportation manifest and simplified greatly the preparation of this document. Transmitted by air when a convoy sailed, the supply manifest was another step in making adequate information available to overseas supply bases. With this advance information available it was no longer necessary to radio cargo details; only brief summaries were thereafter transmitted by radio.

A final step to facilitate identification was taken in May 1944, when all overseas commanders were instructed to assign numbers to line items on a requisition. The requisition line item number consisted of not more than three digits starting with the number one for the first item and continuing in sequence throughout the requisition. This provision had the effect of limiting a single requisition to 999 items. As a rule, overseas theaters were requested not to include more than 400 separate items on a requisition. The requisition number and the line item number were thereafter shown on all extracts and on shipping documents.

By the end of the fiscal year all of these procedures combined to guarantee an overseas theater adequate information in advance about shipments of supplies. They could thus check response to requisitions, plan the unloading of cargo, and direct the distribution of supplies to overseas depots.

Supply of Newly Standardized Items

The peculiar conditions of jungle warfare in Pacific areas led to the development of special types of weapons and equipment for use there. These specially designed items were taken overseas by teams of officers of the Army Service Forces and demonstrated at the beginning of the fiscal year 1944. Requisitions received as a result of these demonstrations were combined into what was called the jungle warfare project. Because of the enthusiasm with which this new equipment was received in Pacific theaters, it was decided that all theaters of operations should receive first-hand information and demonstration of new matériel being developed in the United States. A separate agency in the Army Service Forces was set up under the Director of Plans and Operations to direct demonstration of new equipment. By the end of the fiscal year supply action had been taken on 10 special projects covering 234 different items of new equipment for the 5 major theaters.

The demonstration teams sent overseas explained the potential use of new and improved equipment. In addition, they evaluated the performance of the equipment in actual use and determined the needs which might arise in the theater upon adoption of the item. One group studying uniforms and soldiers' individual equipment visited the South Pacific, the European, and the North African theaters. Another group went to the same theaters investigating rations and their packaging. Separate groups were sent to all theaters to weatherproof Signal Corps equipment. Medical Corps groups were dispatched to Pacific areas to assure the proper operation of medical appliances. Ordnance teams demonstrated new types of ammunition, combat vehicles, and weapons. Special Engineer equipment for assault and demolition activities was sent overseas. In this manner the Army Service Forces promoted requisitions by overseas commanders for the latest available types of improved matériel.

In April 1944, the Army Service Forces, through ports of embarkation, began to provide theater commanders with information about authorized allowances and the availability of all newly standardized items. The theater commander then furnished the port with marking instructions and shipping priority for the dispatch of these items to his command. In this way much correspondence was avoided between

oversea commands and the Army Service Forces about the issue of new types of supplies.

Exchange of Army-Navy Equipment Overseas

All but one of the major theaters during the past fiscal year launched major amphibious attacks upon hostile shores. Such attacks called for the close degree of cooperation between Army and Navy commands. Oftentimes these operations required that certain items of equipment and supplies issued by the Army be provided Navy forces and that naval equipment be supplied Army troops. In order to facilitate transfers between Army and Navy commanders overseas, a War Department directive was published in September 1943 authorizing the transfer of Army equipment and supplies to the Navy by an overseas commander when the items were needed for current operations. A parallel policy was adopted by the Navy Department. The Army continued to requisition military supplies through regular supply channels. Oversea transfers have been made on a limited scale to meet specific needs.

Tire Control Overseas

In December 1943 the War Department dispatched a letter to all overseas commanders calling attention to the critical tire shortage which would arise during the next 15 months in the supply of heavy duty tires of 8-ply construction or heavier. The tires affected were those used on all mobile artillery, on construction equipment, and on trucks. Because of the anticipated shortage, a stringent policy governing the supply of tires was announced. In addition, the importance of proper preventive maintenance of tires was emphasized. Surveys indicated that the useful life of all tires in the Army might be extended 50 percent by proper care. Overseas bases and commands where active military operations were not being conducted were informed that they would receive only reconditioned, serviceable used, and second quality tires and tubes for replacement of existing tires. All overseas theaters were instructed to establish tire reconditioning shops to maintain currency of existing tires and tubes. Accumulations of unserviceable tires and tubes were to be returned to the United States. Administration of tire supply and conservation was delegated to the Army Service Forces.

In February 1944 overseas commands were notified of the creation of a Tire Control Unit in the office of the Chief of Ordnance. Each overseas command was directed to prepare and forward to ports of embarkation a monthly tire status report. Requisitions for tires received by ports were forwarded to the Chief of Ordnance for approval. In supplying new tires the Tire Control Unit gave first priority to replacement needs of active overseas theaters. Second priority went to new vehicles destined for overseas.

These tire reports revealed that Australian production was adequate to handle all American Army needs in Pacific areas and that Indian production would meet tire requirements in the China-Burma-India theater. Australian tires were made from a crude rubber which was ideally suited for coral terrain. Australia was the sole source of supply for these tires.

Upon the basis of reports from overseas commands showing replacement requirements and stocks on hand it was possible for the

Army Service Forces to redistribute tires between theaters. Sizable quantities were recovered from both North Africa and the Middle East. The reports indicated that adequate tire supply was available for the invasion of Europe.

In April 1944 the Army Service Forces dispatched a preventive tire maintenance program to all overseas commands as a guide for their use in improving maintenance programs. At the end of the fiscal year separate levels of supply for tires were being established for each theater. Replacement needs would be supplied in accordance with the established priorities for each theater. Careful control and supervision of all tire supply will continue.

Recapture of Excess Supplies Overseas

During the early stages of the war relatively large garrisons were established in various overseas commands. A large number of these commands received items of equipment and supplies in excess of authorized allowances at the request of the commander concerned. Later the strength of many commands was reduced in size when the danger of attack receded. In some cases, as in the Alaskan Department, the cessation of active hostilities resulted in changes in troop strength. Changes in deployment of troops resulted in the creation of excess supplies in certain overseas commands.

In order to redistribute excess supplies a policy on recapture of equipment in overseas commands was published in September 1943. Overseas commanders were directed to review supplies on hand in the light of their requirements and to report excess amounts to the War Department for disposition instructions. Excess spare parts and salvage were to be returned to the United States without waiting for any instructions. These instructions were repeated in May 1944.

When major items of excess equipment were reported to ASF headquarters, instructions were issued to the theater directing certain items to be returned to the United States and others to be sent to designated theaters. For example, the North African theater of operations, in February 1944, reported a large quantity of excess equipment and supplies, including 7,000 .30-cal. machine guns, some 7,000 Browning automatic rifles, and some 825 half-track cars. Disposition instructions were furnished transferring part of these supplies to the Free French, part to the European theater of operations, and the remainder were returned to the United States.

The Headquarters Staff School

To assist theater commanders and their commanding generals of supply organizations, the ASF in March 1944 established a school for training staff supply officers. This school was operated by the Director of Plans and Operations in ASF headquarters. Prior to this time staff supply officers had received some special training in the California-Arizona maneuver area.

The first class was limited to 20 officers who entered the school on 10 April and graduated on 6 June 1944. The students selected were from the rank of captain to colonel, were qualified for overseas duty, were usually graduates of the Command and General Staff School, and ranged in age from 25 to 40. The course of instruction consisted of lectures from headquarters officers and inspection trips to field instal-

lations. About 75 percent of the instruction time was spent working in individual offices as a regular part of that office. Of the 20 members of the first class, 16 were immediately assigned to key staff positions overseas. A second course was begun on 19 June.

Redeployment

During the fiscal year the Army Service Forces prepared to shift the major supply effort from the Atlantic to the Pacific after the defeat of Germany. It was recognized that the speed and efficiency with which redeployment was executed would be a major factor contributing to the opening of the final effort against the Japanese. Accordingly, advanced plans were prepared to insure a rapid and complete redeployment with the least cost in time.

The magnitude of the redeployment effort depended upon basic military decisions provided the Army Service Forces by the War Department. The first of these decisions was the size of the force to be moved from the Atlantic to the Pacific. Upon the defeat of Germany the preponderance of American military strength would be in Europe. Immediately afterward the preponderance of military strength would be shifted to the Pacific. In the second place, it was necessary to determine the size of the force to be maintained as a garrison in the European theater in order to estimate the continuing maintenance requirements for that force. In the third place, there was the question of the size of the forces to be returned to the United States. Debarkation requirements for wounded were studied and adequate facilities for medical care on both coasts were assured. In the fourth place, there were the forces to be moved from the United States directly to the Pacific and the forces to be retained in the United States as a strategic reserve.

Upon the basis of broad assumptions about these basic decisions the Army Service Forces proceeded to determine the various capacities available to effect redeployment. The supplies and equipment to be moved from Europe to the Pacific were estimated as well as the support supplies required once the preponderance of military force was located in the Pacific. Shipping schedules were determined to move troops and cargo into the Pacific and sailings were allocated from oversea ports in Europe to United States ports and to Pacific points of debarkation. The requirements for shipping to carry on a civilian relief program in both areas were estimated.

Additional details considered were these: the ability of west coast railroads to carry increased loads to Pacific ports, the availability of storage facilities on the west coast to handle larger loads, and the capacity of west coast ports to load ships. It was determined that Army cargo moving to the Pacific coast would increase 50 percent during the first 6 months after the defeat of Germany. In order to meet the full supply burden to the Pacific theater, Atlantic and Gulf ports were also designated to assist the Pacific coast ports. It was determined to build no additional storage facilities. The increased supply load would be handled by using existing filler depots, certain depots in the Middle West, and by increased efficiency in methods of distribution.

A problem of such magnitude as redeployment of military effort from one part of the world to another required extensive planning

throughout the entire ASF. In particular, the Chief of Transportation, the Director of Supply and the Director of Matériel contributed vital parts of the whole plan as eventually put together by the Director of Plans and Operations. A preliminary edition of the plan was issued in April 1944. As a result of various revisions, the plan was developed to become part I of the basic plan of the Army Service Forces for the period subsequent to the defeat of Germany and prior to the defeat of Japan.

Upon the defeat of Germany the ASF was prepared to carry out its mission of effecting the reorientation of military effort from Europe to the Pacific. Large-scale overseas supply activities would continue for a considerable period after the defeat of Germany.

Chapter 3. TRANSPORTATION

During the fiscal year 1944 more than 2,600,000 troops and other passengers were transported overseas by the Army Service Forces, contrasted with 1,200,000 in the previous year. About 70 percent of all passengers were dispatched across the Atlantic and 30 percent across the Pacific. Even though the proportion was so much larger across the Atlantic during the fiscal year, more soldiers were embarked for Pacific theaters in the year ending 30 June 1944, than were sent across the Atlantic Ocean in the year ending 30 June 1943. The largest single month in embarkation of oversea troops occurred in March 1944, when 285,000 men left the United States.

The total amount of cargo shipped overseas during the fiscal year 1944 came to 39,161,953 measurement tons, contrasted with 18,987,796 measurement tons in the preceding year. For the past fiscal year 60 percent of all cargo was destined for Atlantic theaters and 40 percent for Pacific theaters. Again the amount of cargo dispatched across the Pacific during the fiscal year 1944 was nearly 2 million measurement tons greater than the cargo shipped across the Atlantic during the fiscal year 1943, and was twice as much as the amount shipped to the Pacific in that year.

The great increase in oversea troop movements and cargo shipments occurred because of the increased shipping available to the United Nations and the greatly reduced losses from enemy action. This improvement in the shipping situation was reflected in part by the number of ships assigned to the use of the Army Service Forces. Total cargo and troop ships in Army service on 30 June 1944 numbered 1,498, contrasted with 719 at the end of the preceding fiscal year. Cargo carrying capacity of the ships in Army service on 30 June was 14.5 million measurement tons, an increase of 122 percent over the previous year. The troop carrying capacity of the ships in Army service on 30 June 1944 was more than 500,000 men, an increase of 139 percent above the capacity at the end of the preceding year. Of the 1,498 vessels in Army service at the end of the fiscal year 1944, 1,262 had been allocated to the Army by the War Shipping Administration; 57 vessels were owned by the Army; 103 vessels were chartered; 59 vessels were loaned by the Navy; and 17 vessels were loaned by the British Government.

The total number of men and the tons of supplies shipped overseas have been limited primarily by available shipping. Steady improvement in the shipping situation enabled the Army Service Forces to haul greatly increased numbers and to insure that future military operations would have the men and supplies required.

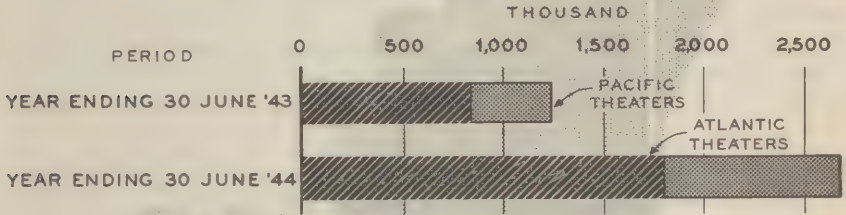
A Balanced Fleet

The stupendous effort which the United States made to provide new ships to meet the needs of the United Nations involved careful

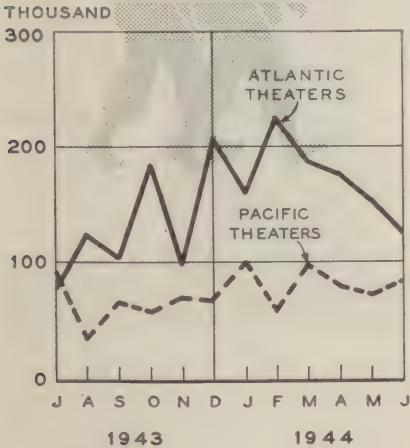
CHART 8

ARMY TRANSPORTATION TO OVERSEAS THEATERS

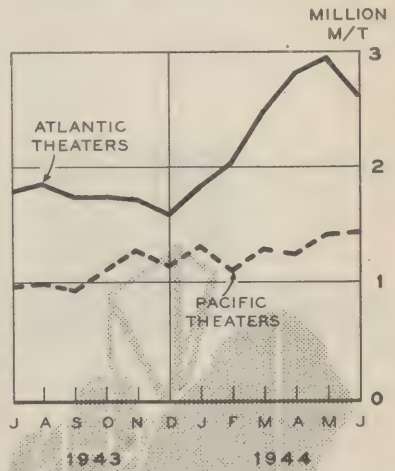
TROOPS AND OTHER PASSENGERS EMBARKED YEARLY



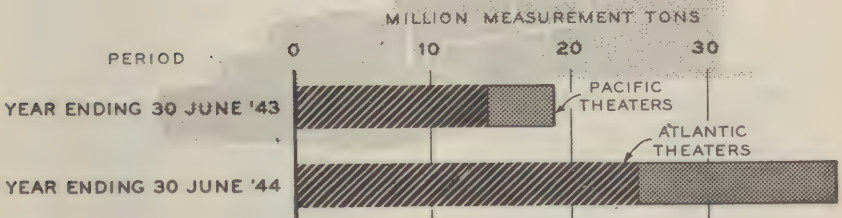
TROOPS AND OTHER PASSENGERS EMBARKED MONTHLY



CARGO SHIPPED MONTHLY



CARGO SHIPPED YEARLY

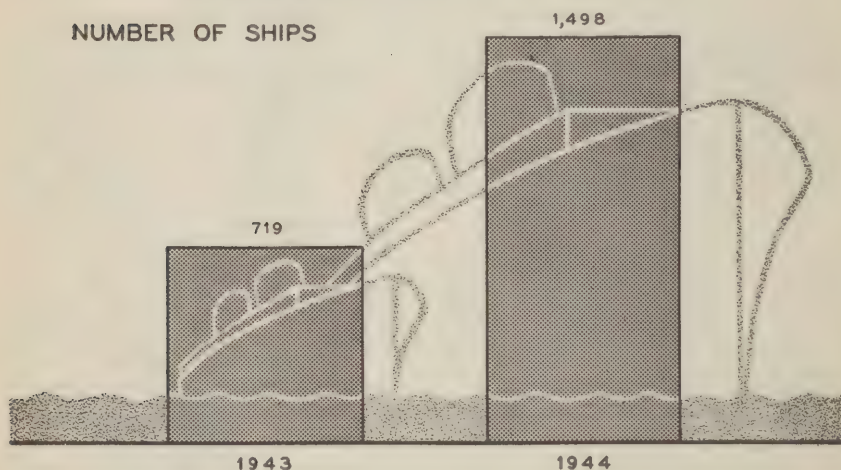


planning to keep the fleet in balance. In general, available tonnage was divided into three categories: passenger ships, dry cargo ships, and tankers. If the total capacity in any one category fell behind that of others, the entire overseas program was slowed down.

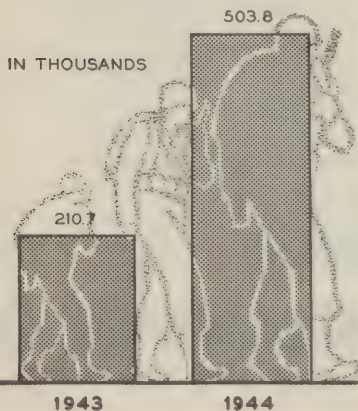
A number of factors affected the balance between categories unexpectedly, and so the shipbuilding program had to be kept under constant review. The rise or decline of losses from enemy action, which chiefly affected slow-moving freighters and tankers, was a major consideration. Alterations in military strategy and a change in shipping emphasis from one theater to another likewise affected the requirements for different types of ships. Changes in the lend-lease program had a direct bearing upon the amount of shipping available for military purposes. The Chief of Transportation of the

CHART 9 VESSELS IN ARMY SERVICE

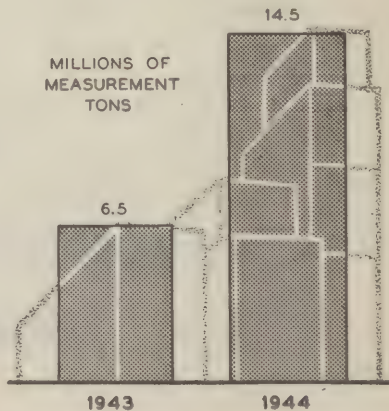
NUMBER OF SHIPS



TROOP CAPACITY



CARGO CAPACITY



Army Service Forces ascertained the requirements of the Army for the three categories of ships and presented these needs to the joint and combined planning bodies which established the shipbuilding and ship conversion programs.

At the end of the fiscal year 1943 it was evident that cargo carrying capacity would support the overseas movement of more men than could be hauled by available troop carriers. For that reason a conversion program was begun to change certain freight vessels into troop ships. The bulk of this work was contracted for by the United States Maritime Commission on the basis of specifications provided by the Chief of Transportation. Twenty-eight conversion jobs which were completed during the fiscal year were planned, contracted for, and supervised by the Transportation Corps directly. In other cases the change-over from a freight vessel to a troop ship was accomplished during construction.

During the fiscal year 12 hospital ships were provided by conversion of other vessels. This was only half of the program for hospital ships. Eventually 18 remodeled old vessels and 6 new Liberty ships were to be converted into hospital ships. The Transportation Corps scheduled the employment of these vessels while the medical staff was provided by the Surgeon General. Charleston was designated during the year as the home port of Army hospital ships since these vessels traveled under lights and out of convoy. For that reason, they avoided regular convoy lanes and docked at a port which did not handle sizable out-bound passenger and cargo movements.

Keeping Ports Liquid

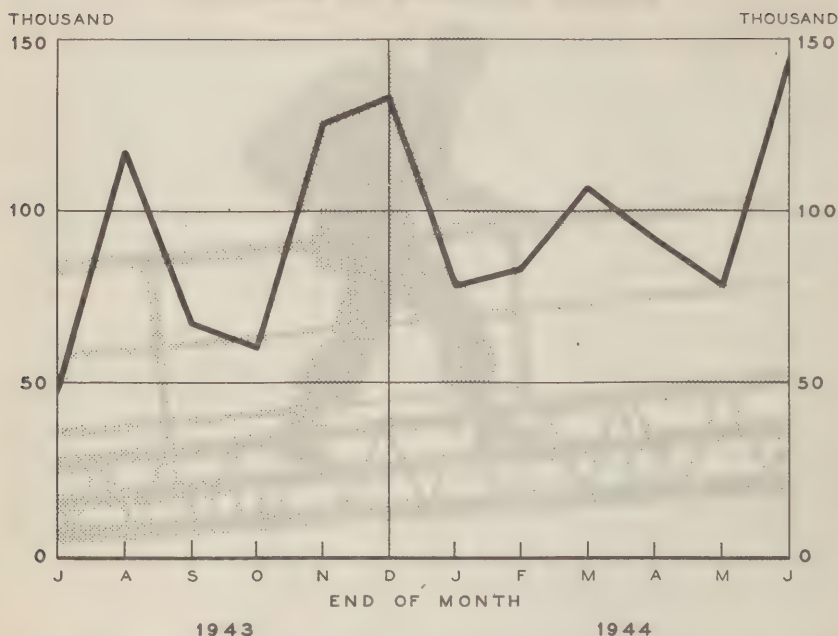
Approximately three-fourths of all overseas shipments were handled by ports of embarkation and cargo ports on the Atlantic Ocean and the Gulf of Mexico. One-fourth of the traffic moved through ports on the Pacific coast. During the year the Los Angeles subport became a full port of embarkation. Otherwise few changes were made in the location and permanent facilities of Army ports.

Constant attention was given to keeping all ports in a completely liquid condition. If these connecting links between inland and ocean carriers became congested, the military effort overseas would suffer. With the growth of industrial production and the constant increase in the number of ships available to move supply overseas, the danger of clogged ports was a very real one. The movement of men from staging areas and into ports did not occur until troop ships were ready to embark the men. The loading procedures worked out in preceding years continued to handle the larger numbers of troops without delay or congestion.

The number of troops on hand in staging areas fluctuated from month to month from 50,000 to 142,000 as of the last Monday in the month. The accompanying chart indicates the continuing filling up and emptying of staging areas without at any time taxing their full capacity, which remained throughout the year well above the actual troops on hand.

Careful control was continued over the movement of cargo into ports. During June 1944 a total of 153,216 carloads of export freight was unloaded by the railroads at United States ports, compared with 119,435 carloads in June of 1943. Nonetheless, on 30 June 1944 there

CHART 10
TROOPS IN STAGING AREAS



were only 24,650 cars at ports awaiting unloading compared with 24,702 on 30 June 1943. The New York port of embarkation, which handled the largest export traffic, had a smaller average number of cars on hand during June of 1944 than during any other month since the autumn of 1941.

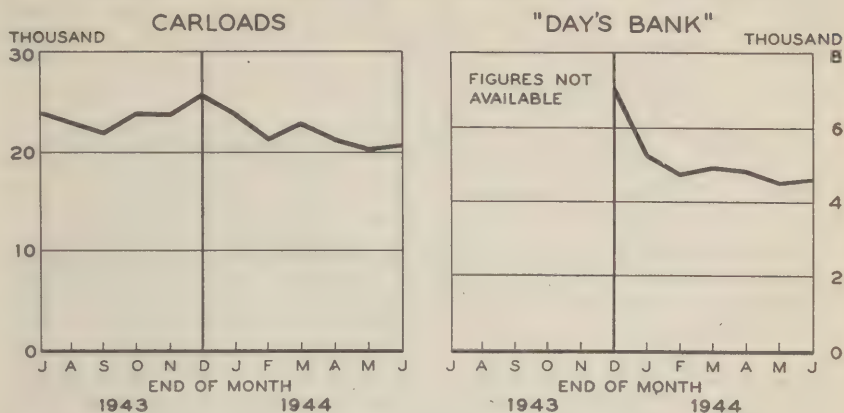
The actual number of cars on hand at ports fluctuated during the year between 20,000 and 28,000. The peak number on hand occurred in December 1943, and had declined to the low point for the year on 30 June 1944. At no time did the number of cars on hand require more than a week's time to unload. At the end of the year the "days bank" at ports of embarkation was 4½ days.

This favorable condition could be attributed in large degree to the effective control exercised over the movement of export traffic from inland points. This control was exercised in the first instance by a Transportation Control Committee, an interdepartmental body on which the Army Service Forces furnished the War Department representative. This committee established monthly "block releases" for lend-lease freight, indicating the total tonnages which might move to respective ports. These tonnages were established upon the basis of the amount of freight different governmental agencies, including the War and Navy Departments, planned to export. The committee also exercised broad police powers over all types of port-bound traffic and diverted ships when the necessity arose. The machinery for operation of this control was provided by the Transportation Corps.

Individual releases for specific shipments of Army and lend-lease supplies were issued by the Office of the Chief of Transportation on the

CHART 11

EXPORT FREIGHT ON WHEELS AT PORTS



basis of applications filed by shippers. In addition to insuring that unit releases for a given port did not exceed the block release for the port, the Traffic Control Division specified the time when each shipment might leave the point of origin, designated the route by which it should move, and exercised whatever control was necessary during transit. In the 1 month of June 1944, nearly 119,000 carloads were released to ports under unit releases. Of this total, 77,000 carloads represented War Department supplies, 17,000 were lend-lease supplies procured by the War Department, and 25,000 carloads were other lend-lease supplies.

In each port of embarkation was a port agency maintaining close surveillance of all freight moving through the port. It watched conditions at terminals, warehouses, and open storage spaces. Daily reports showed what types of traffic, if any, were causing trouble. These agencies investigated the number of railway cars which were held in the port unduly long. At 22 leading ports on 23 June, 1944, there were only 36 carloads which had been on hand and unloaded for more than 30 days; the number held over 30 days on 25 June 1943, was 514. The number of cars held unloaded from 10 to 30 days was 1,722 on 23 June, 1944, contrasted with 4,913 on 25 June, 1943.

Ten holding and reconsignment points during the year provided temporary storage for supplies which were destined overseas but which were not immediately required at ports in loading ships. In addition, six regulating stations, located at key points on the transcontinental rail systems, controlled the flow of traffic to the Pacific coast.

Special precautions were taken in the loading of explosives. Ammunition shipped overseas expanded rapidly as the Army on all fronts took the offensive. Ammunition piers had been constructed in port areas at isolated places where an explosion would do the least possible damage to civilian life and property. Special control was exercised to prevent large concentrations of ammunition at or near loading piers. Ceilings were established which limited the number of cars which might be brought to piers and their supporting yards. Any traffic moving by rail in excess of these quantities was diverted to storage

facilities or arsenals pending availability of the ships. The growing shipping load along the Atlantic coast was dispersed among many different ports in order to limit the danger from explosion at any one place. At the end of the fiscal year there had not been a single explosion of ammunition at any Army pier.

Maximum Utilization of Cargo Space

The shipping of such great quantities of cargo overseas during this war was made possible only by the most careful attention to cargo loading. Advance planning and careful timing enabled the Transportation Corps to insure maximum utilization of available cargo space.

Because of the large bulk of Army cargo in relation to weight, and because of unusual shapes and weights of many items, the problem of efficient stowage required intensive study. As a result, the handicaps suffered in under-deck stowage were largely off-set by the utilization of deck space. Techniques for blocking, lashing, and cradling every type of equipment that could be shipped on the open deck were worked out. Scarcely a vessel in recent months left port which did not have her deck spaces, including hatch covers, completely utilized. It was possible during the year to load even an 86-foot tug weighing 200 tons on the afterdeck of a Liberty ship.

The shipment of airplanes further illustrated the problem and the accomplishment. At the end of the fiscal year 1943 the Joint Chiefs of Staff directed that the maximum number of airplanes should be moved in assembled condition in order to expedite availability of aircraft on arrival overseas and to reduce theater needs for personnel on assembly work. A committee on aircraft transportation, including a representative of the Transportation Corps, was formed to devise ways and means of giving effect to this instruction. Outstanding among the results achieved was the utilization of tankers as plane carriers with the aid of a specially installed deck. Nearly 500 tank vessels were equipped to haul planes. During the fiscal year 1944 some 19,000 planes were shipped overseas on vessels, of which over 12,000 were shipped in assembled condition.

Ship Repairs

When an Army transport returned from overseas it was at once boarded and surveyed by qualified technical personnel to determine repair requirements. Assignment of work to be done was made by means of job orders issued by the Transportation Corps. Wherever possible, the repair work was done alongside the Army dock while loading and refueling were in progress. At the end of the fiscal year the Transportation Corps had negotiated 162 master ship repair contracts under which approximately 10,000 job orders were issued. The master ship repair contract procedure developed with the cooperation of the Navy Department and the War Shipping Administration controlled prices and permitted immediate repair operations on all vessels.

In-Bound Traffic

In preceding fiscal years the military movement of supplies and of men from overseas into the United States was negligible. During the fiscal year 1944 the in-bound movement of men assumed sizable pro-

portions. The increase was in part the natural consequence of having a larger army overseas and of the troop rotation program which went into effect during the year; in part it resulted from the intensified combat activity causing greater numbers of patients to be returned and prisoners of war to be moved into this country.

The total number of passengers arriving at United States ports of embarkation in the year ending 30 June 1944, was as follows:

Individual Passengers.....	88, 776
Prisoners of War.....	142, 899
Others.....	350, 258
Total.....	581, 933

There were also sizable quantities of salvage and some excess supplies which were returned to ports of embarkation for proper disposal within the United States.

Inland Traffic

During the fiscal year 1944 Army traffic moving over commercial carriers in the United States on War Department bills of lading amounted to 95.7 million tons. This was an increase of 26 percent over traffic during the preceding year. The tonnages transported by various types of carriers were as follows:

	<i>F. Y. 1943</i>	<i>F. Y. 1944</i>
Rail—Carload freight.....	68, 051, 500	84, 743, 000
Rail—LCL.....	1, 724, 000	1, 396, 500
Rail—Express.....	212, 300	245, 400
Motor.....	5, 531, 000	8, 168, 200
Water.....	377, 700	1, 130, 300
Air.....	1, 560	1, 070
Total.....	75, 898, 060	95, 684, 470

Of the freight moved during the 12 months about 58 percent was directly routed by the Traffic Control Division in the Office of the Chief of Transportation. Roughly two-thirds of the freight thus directed was domestic traffic and one-third was for export. About 470,000 route orders were issued. The routings included some 50,000 cars loaded with shipments of exceptional height or width and therefore involved, in addition to the usual considerations of rates, delivery time, and traffic density, the additional element of clearances along rights of way. An additional 3,600 carloads routed in the field were diverted en route by the Traffic Control Division because they would not clear structures along rights of way.

Toward the end of the fiscal year 1943 it became evident that an increasing volume of movements was being ordered on an "immediate" basis. As a result, field agencies were requesting the Transportation Corps to obtain rail equipment at once. Actually in 1 month, out of 6,000 main movements, over 56 percent demanded a routing and movement within 24 hours and most of the remaining 44 percent requested movement in less than 72 hours.

An experiment was begun by the Army Service Forces designed to indicate well in advance a period of time during which a movement might occur. Orders provided that a particular movement would be made during a period of not less than 7 days with the actual date being set by the Traffic Control Division in the Office of the Chief of Trans-

portation. This experiment was completely successful. It enabled the Transportation Corps to fix the actual date of movement based upon the knowledge of other movements in the same vicinity and of availability of equipment. The universal adoption of this system was somewhat reluctantly accepted by the Army Air Forces and the Army Ground Forces, since the decision about date of movement of troops was traditionally one made by their commanders. Within the United States the critical transportation situation required a modification in the authority of troop commanders. Both the Ground Forces and the Air Forces recognized this and the new system was put into effect at the beginning of the fiscal year 1944.

Thereafter there was complete central control of domestic movements so that out of some 6,000 movements a month, only 3 percent had to be arranged within 72 hours. The remainder requested movement after more than 72 hours. This arrangement saved many thousands of cars which might otherwise have been shunted hundreds of miles completely empty. Transportation authorities estimated that the new procedure was one of the major factors in avoiding a breakdown in rail facilities available for use by the Army.

During the fiscal year 1943 the Army Service Forces worked out a procedure with the Army Ground Forces for the coordinated movement of divisions. Divisional moves were scheduled in such a way as to permit the use of one set of rail equipment for the movement of two or more divisions. In one case as high as seven divisions were moved by one set of railway equipment. Later in that year experiments were conducted in moving units without their trucks and other general purpose vehicles. These experiments were successful and were adopted by the Army Ground Forces and the Army Air Forces at the beginning of the fiscal year 1944.

In 1 month as much as a million dollars in transportation costs were saved by ground force movements without general purpose vehicles. These vehicles were left behind at one station and provided the unit at the new station where it was located. This method of moving became standard procedure during the year. Only in exceptional cases were units moved with their trucks and other such equipment.

In order to assist train commanders in the performance of their duties the Army Service Forces prepared War Department Pamphlet No. 20-7 which was published in March 1944. This Guide for Troop Train Commanders filled a need which had existed since the beginning of the war. Many train commanders in charge of troops held such an assignment only once in their lives. They received no training in preparation for the job and yet they were in effect the equivalent of a post commander whose post was in transit from one point to another. The guide brought into one document all of the important information required by the train commander in the performance of his duties. It was distributed not only to officers but also to key personnel of railroads involved in handling troop trains.

Rate adjustments negotiated during the year resulted in savings in freight charges of at least \$36,000,000 per annum. These adjustments included rate reductions obtained from carriers, revised classification rates, new or revised storage-in-transit arrangements, and actions before regulatory agencies.

Demurrage was a subject of continued study and average agreements were worked out with carriers affecting many Army installations. In April 1944, after negotiations with the Association of American Railroads the War Department Master Average Demurrage Agreement was put into effect. This agreement confirmed all previous arrangements and provided a simple method for placing additional installations under its terms. Although a certain amount of demurrage was unavoidable, constant effort was made through control of shipments and other means to reduce the number of cars held at War Department installations to a minimum. An average of 250 demurrage cases per month were contested and many bills were reduced or cancelled.

Army-Navy consolidating stations shipped a total of 688,043 tons of freight during the year; this was 138 percent more than in the preceding year. The Navy Department, including the Marine Corps, and Coast Guard, began using these facilities in February 1943, and by 30 June 1944 were consigning approximately 50 percent of the freight handled by the stations. These stations were successful in combining thousands of less than carload lot shipments into carload lots. Unless the contents of a consolidated car were consigned to a single Army installation they were forwarded to distributing agencies for breaking up and reconsignment. Two new consolidating stations were added during the year—one at East St. Louis and one at San Antonio, and new distributing agencies were opened at Atlanta, El Paso, and Oakland.

In September 1943 the Transportation Corps assumed operational responsibility for railroad open storage yards, previously supervised by the Quartermaster General. At that time there were 44 such yards in existence, of which 32 were in active use at the end of the year. These yards, all but one of which were located in the eastern part of the United States, supplemented holding and reconsignment points as reservoirs for supplies in transit. The railways acted as warehousemen, but the Transportation Corps assumed responsibility for supervising the operation, guarding, and fire protection of the yards. On 24 June 1944 there were 17,521 carloads of freight on hand in these yards.

Troops moving in parties of 40 or more were also routed by the Traffic Control Division in the Office of the Chief of Transportation. In the year ending 30 June 1944, routed parties totalled 9,283,864 persons. This was a reduction of 7.1 percent from the previous year, reflecting the decrease in the number of military personnel stationed in the United States and a decline in travel incident to successive phases of training. The movements made during the year involved the issuance of approximately 60,000 routing orders. About 97.6 percent of these troop movements occurred by rail; the remainder by motor. Routings of troops traveling in parties of 39 or less were handled by transportation officers of the post where the movement began. It was estimated that two-thirds of all troop movements measured by number traveled in parties of 40 or more and one-third in parties of 39 or less.

The movement of sick and wounded troops from ports became sizeable during the fiscal year 1944. At the end of the year 120 Government-owned hospital ward and dressing cars were in operation and

100 more were on order. Additional equipment provided by the railroads was also used. In December 1943, all hospital cars were lodged in a general pool to be used as required. In April 1944, hospital equipment traveled 282,745 loaded miles contrasted with an average of 50,000 loaded miles per month before December 1943.

The large numbers of soldiers and officers returning from overseas caused the Transportation Corps to establish a baggage unit during the year. This unit helped to prevent the separation of men and baggage and obtained the return of such baggage when separation did occur. This operation should help prevent wide-spread scattering of men and baggage during demobilization, such as occurred after the last war.

In the year ending 30 June 1944, 1,200 specially designed troop sleeping cars were placed in service in order to relieve the heavy strain on tourist and standard sleeping equipment of the Pullman Co. These cars were designed by the Transportation Corps and financed by the Defense Plant Corporation. Operated by the Pullman Co., this new equipment proved highly satisfactory. Also 400 new and improved kitchen cars were placed in operation by the railroads to replace the converted baggage cars previously used for this purpose.

The number of Army reservation bureaus scattered throughout the United States increased from 27 to 34 during the year. In the 12 months ending 30 June 1944 these bureaus handled requests for more than 1,200,000 sleeping-car reservations for persons traveling under War Department orders. In less than 6 percent of the cases did the bureaus fail to obtain the desired reservations.

In addition to the fleet of Army-owned tank cars the War Department also operated within the United States some 623 locomotives, 1,703 cars, and 257 cranes. Almost all of this equipment was used within military posts. During the past fiscal year railway operations at 160 different stations were reviewed to determine the possibilities of reducing the railway equipment and the number of crews employed.

Highway Problems

The great increase in the demand for local bus service, as well as shortages of equipment and gasoline, created critical transportation problems in the movement of War Department employees and war workers between homes and places of employment. During the fiscal year 1944 the pool of converted and new buses owned by the War Department increased from 1,374 to 5,007. At the end of the year 4,617 buses were in actual operation and 390 were held in reserve. Of a total of 4,628 allocations made during the 12 months, 1,193 were for home-to-work service and 3,435 were for service at War Department installations. In most cases the equipment was leased by the War Department to private transportation companies to supplement their regular transportation operations. The Transportation Corps also collaborated with the Public Roads Administration and other public bodies in determining the need for improvements to highways; gave emergency assistance to commercial truck and bus operators serving War Department installations when they were unable to obtain replacement parts, tires or gasoline; and made numerous studies to improve the utilization of War Department motor equipment used to transport men and supplies.

Operation of Nation's Rail System

On 27 December 1943, the Army Service Forces at the direction of the Secretary of War and in accordance with an Executive Order of the President took over operation of all the railroads. Continued management by the owners was threatened by strikes which were scheduled to begin on 30 December. In anticipation of this eventuality, a comprehensive plan for the control and operation of the railroads by the Army had already been prepared. This plan was placed in immediate effect. The president of one of the large railways was designated as principal advisor to the Commanding General, Army Service Forces, and to the Chief of Transportation. Other consultants were drawn from the fields of railway management and railway labor. The staff and organization of the Association of American Railroads and the American Short Line Railroad Association were made available to the War Department. Seven regional directors were appointed among leading railway executives and commissioned as colonels in the Army of the United States. Approximately 600 commissioned officers were assigned to work directly with the individual carriers subject to the authority of the regional directors.

The field organization thus hastily created was given the fullest cooperation by the railroad companies. The plan contemplated that Army representatives would abstain from interference and leave the operations in the hands of railroad management, with as little direction from headquarters ASF as possible, unless such a course proved impossible. This plan was adhered to. Other measures which had been prepared in case the first plan proved unserviceable were unnecessary.

When the underlying disputes between railway management and railway labor were settled and the danger of interrupted service was passed, the return of the railways to their owners was ordered on 18 January 1944. The railway systems were turned back to their managements as promptly and as smoothly as they had been taken over. Releases were obtained from nearly 800 carriers which practically precluded the possibility of claims against the United States arising from the seizure.

Chapter 4. INTERNATIONAL AID

In the fiscal year 1944 more than 5.4 billion dollars worth of military supplies exclusive of aircraft were transferred to our Allies. Of this total 75 percent was Ordnance matériel. The largest single recipient was the United Kingdom to which was transferred 62 percent of all military supplies. The U. S. S. R. received supplies amounting to nearly $1\frac{1}{2}$ billion dollars or one-quarter of the total. Total supplies transferred to French North Africa during the year were valued at \$275,000,000 and those to the Chinese Government were valued at \$140,000,000.

Over-all figures could give only a general conception of the magnitude of the international aid program of the United States Government. During the fiscal year more than 12,000 tanks and 124,000 combat and general purpose vehicles were shipped overseas for the use of our Allies. More than a billion rounds of ammunition of all types were provided. Some 5,700,000 pairs of shoes, 2,300 mules, 20,000 tons of leather, 25 million yards of woolen material, and 45 million yards of cotton were dispatched overseas for the use of the other United Nations. Medical supplies provided during the fiscal year were almost three times as large as in the preceding fiscal year. Shipments of communications equipment of all kinds were more than twice as much. Over 139,000 field telephone sets were provided other countries as well as 35,000 microphones, 45,000 cable assemblies, and 29,000 radio sets of a particular type.

One of the major tasks undertaken through the lend-lease program was the reequipping of French troops to fight alongside English and American soldiers in the liberation of Western Europe. When French North and West Africa were occupied at the end of 1942 there were more than 200,000 fully trained and some 275,000 semitrained French soldiers in the area. None of these troops had modern military equipment. At Casablanca in January 1943, it was agreed in principle that the United States would equip and maintain a French Expeditionary Force. The task of carrying out this decision was a part of the international aid operations of the Army Service Forces. Shipments were begun immediately and reached sizeable proportions in August 1943. By 1 January 1944, the program was well underway. Initial equipment of the French Expeditionary Force was completed by the end of the fiscal year except for a few odds and ends. Maintenance and replacement supplies would continue to be provided by the Army Service Forces.

During the early stages of military lend-lease the major problem was in the equitable distribution of the limited supply of munitions that could be made available to our allies without interference with our own armament program. During the fiscal year 1944, however, vast increases in the production of war materials made it possible to

CHART 12

LEND-LEASE CONSIGNMENTS, FISCAL YEAR 1944*

BY SUPPLYING SERVICE



BY RECIPIENT COUNTRY



* GROUND EQUIPMENT ONLY - DOES NOT INCLUDE TRANSFERS OF SUPPLIES BY COMMANDING GENERALS OVERSEAS

fulfill most of the requirements of the armies of lend-lease nations. Problems of maintenance of original issue and of careful determination of requirements emerged during the year as major concerns.

General policy on the distribution of ground military equipment was determined by the Combined Chiefs of Staff and by higher authority. Within the limits of these policies there was wide latitude for the Army Service Forces to develop its own techniques for screening requirements and for preventing the shipment of unnecessary items.

Lend-lease requirements for ground force equipment similar to those used by the Army of the United States were incorporated into section I of the Army supply program. These requirements were presented by the requesting nations to ASF Headquarters where they were carefully examined. The requests were then transmitted to the technical services to determine the feasibility of production and the degree of interference with the supply of our own forces. Requirements were reviewed by the ASF in conjunction with the War Department General Staff to establish their validity from the point of view of military operations. This determination involved an analysis of the stock position of the requesting nation, the rate of issue and consumption, troop deployment, the nature and timing of operations, the ability of the applicant to produce the items, the ultimate use to be made of the material, and finally, the availability of shipping space to export the quantities involved. This last consideration continued throughout the fiscal year to be a major factor in screening requirements.

An important part of lend-lease requirements consisted of items not used by the American Army. These "noncommon" requirements had to be specially procured; they were included in section III of the Army supply program. These requirements had to be supported by detailed requisitions establishing definite specifications for the quantity and type of desired material. Prior to their final approval for inclusion in part III of the Army supply program, these requisitions were reviewed in the same manner as those for American-type equipment. Final responsibility for approval of procurement rested, however, with the Army Service Forces. During the past fiscal year a representative of the Foreign Economic Administration participated in the screening of noncommon items in order to assist the Army Service Forces in determining whether requests should be considered as military lend-lease or referred to the Foreign Economic Administration as civilian lend-lease. Close cooperation developed between the two agencies in order to separate true military requirements from those whose purpose was to meet civilian needs or to provide rehabilitation or capital improvement equipment. During the year, for example, the purchase of precision measurement equipment and gages was transferred from the Ordnance Department to the Treasury Procurement Division operating for the FEA.

After final approval of noncommon items, specific procurement directives were issued from time to time by ASF headquarters to technical services. In addition to the noncommon items whose procurement was programmed in advance, unforeseen circumstances arose which required "spot" procurement. The volume of such procurement in the Army Service Forces was reduced during the fiscal year

1944 to one-quarter of the volume in 1943. This reflected improved advance planning of lend-lease requirements.

Within the general principles and policies for screening lend-lease supplies there were peculiar techniques developed for the handling of the requirements of different lend-lease recipients. The requirements for the rearmament of French combat troops were first determined by the French Rearmament Commission, a joint United States-French committee located in North Africa. Chinese military requirements were determined in the first instance by the staff of the United States commander in the China-Burma-India theater. With the indorsement of these authorities, both French and Chinese requirements were then submitted to the International Division in ASF headquarters. The requirements of the Union of Soviet Socialist Republics were determined by the President's Soviet Protocol Committee in consultation with representatives of the Soviet Union who were given a list of matériel offered by the War Department. Once approved and included in the protocol, Soviet requirements were automatically incorporated into the Army supply program and procurement started. Thereafter the Army Service Forces determined specific time periods for assigning the Soviet supplies for shipment.

The inclusion of requirements in the Army supply program formerly implied an earmarking of United States production for international aid purposes. During the fiscal year 1943 a block system of assignments was used whereby total production of many items was automatically distributed as fast as supplies emerged from production lines. This automatic block system of assignment was discontinued in the fiscal year 1944. Under procedure in effect on 30 June 1944, it was necessary for lend-lease nations to reestablish their need for items when bids for assignments were presented to the Munitions Assignments Committee (Ground) of the Munition Assignment Board.

The philosophy underlying all lend-lease procedures and practices was that the legitimate military requirements of the United Nations must be fulfilled without permitting those nations to accumulate stockpiles of materials which would never be used in the war, and to prevent the production of munitions which might never be shipped to other countries.

Repossessions

The repossession procedure begun in the summer of 1942 to avoid congestion at American ports was carefully reexamined during the fiscal year 1944. A much closer control over the nonshipment of lend-lease materials was instituted. Unforeseen changes in schedules and in shipping priorities to meet sudden shifts in combat requirements was the principal reason for the stagnation of materials before export. This factor principally affected assignments of munitions to the United Kingdom.

The procedure in effect at the end of the year provided that repossession of material might be made at any time up to actual shipment from the port. Lend-lease supplies "made available" to other nations but still in the hands of a technical service after 45 days might be repossessed with the expressed approval of the Munitions Assignments Committee (Ground). Repossession was required for all mate-

rials "made available" for over 75 days unless specifically exempted by the Committee. In addition, the Transportation Corps reported lend-lease materials held in holding and reconsignment points and at ports over 60 days. This information was presented to the Munitions Assignments Committee for review.

The repossession procedure was not applicable to ammunition, which was controlled under a credit balance system. Established in June 1943, this system of release not only resulted in a tremendous savings in transportation costs but also permitted direct shipment from munitions plants to ports, thus eliminating intermediate handling.

By closely following inventories of material in ports and in holding and reconsignment points, the Army Service Forces was able to call attention to material remaining unfloat and to forestall further demands for similar additional material which would only congest ports and holding and reconsignment points. Repossession reports also proved of considerable value in screening requests for assignment of additional lend-lease equipment.

In order to meet the lend-lease storage requirements of other Government agencies, especially the Foreign Economic Administration, the War Department set aside certain space at holding and reconsignment points which then came under the direct control of the Treasury Department. In addition, depots of the technical services were frequently made available for storage of lend-lease materials purchased by other agencies.

As a guide to future storage requirements, the Army Service Forces started a procedure during the fiscal year 1944 for inventorying lend-lease stores of other agencies held for excessive lengths of time in War Department facilities. The Chief of Transportation in March 1944 began to submit semimonthly reports of materials held at holding and reconsignment points earmarked for foreign governments and awaiting shipping instructions. Machine tools were reported on a monthly basis. In addition, the technical services submitted monthly reports of materials stored in excess of 45 days at other storage facilities. At the end of the year efforts were being made to utilize the reports prepared by the Treasury Department for the Foreign Economic Administration covering storage of all Treasury-procured materials.

On the basis of these reports representations were made to the agencies responsible for the movement of lend-lease materials stored for an unreasonable length of time in Army facilities. As a result of these representations some materials were repossessed.

Reverse Lend-Lease

With the large numbers of American troops overseas and with increased emphasis upon local procurement wherever possible by overseas commanders, reverse lend-lease grew rapidly during the fiscal year 1944. On a cumulative basis to 30 June 1943 it was estimated that the total (Army, Navy, and Maritime) assistance provided to American forces by our allies was about 1 billion dollars. At the end of the fiscal year 1944 this sum had increased to approximately 3 billion dollars. The annual rate of assistance being provided at the end of the fiscal year was more than 2 billion dollars in value.

Reverse lend-lease, or reciprocal aid as it was sometimes called, was obtained principally from the British Commonwealth of Nations.

During the fiscal year 1944 some 1.4 billion dollars worth of items were provided by the United Kingdom, while some \$350,000,000 worth of supplies were provided by Australia. Other large quantities were obtained from New Zealand and India. This assistance was of substantial benefit to the war effort of the United States, since it reduced overseas expenditures, conserved shipping space, and cut down upon procurement which would otherwise have been necessary in the United States.

In the United Kingdom, for example, much of the supplies and equipment needed by United States troops was provided by the British Government as reverse lend-lease. Over 50,000 items were supplied our armed forces in the United Kingdom. In addition to supplies and equipment, the Army of the United States obtained under reverse lend-lease virtually all housing accommodations, air fields, hospitals, repair depots, and other necessary facilities. The Army also received without cash payment numerous services such as ocean and inland transportation of troops and cargo, communications services, utilities, civilian labor, and a host of other miscellaneous services required overseas. During the whole calendar year of 1943 the commercial expenditures for the American Army in the United Kingdom was less than \$2,000,000.

From Australia, a country of only 7 million people, the American forces in the southwest Pacific were receiving goods and services under reverse lend-lease at a rate of a million dollars a day by the end of the fiscal year. More than 90 percent of all food requirements were provided by Australia. The food to be provided during the calendar year 1944 was estimated at between 150 and 200 million dollars by the United States Army's general purchasing agent. In addition to food, other major items obtained from Australia on reverse lend-lease included substantial amounts of clothing, tires, landing craft, barges, and small ships. These supplies were in addition to the large construction program which Australia undertook for American forces, and to the transportation, communication, and other services which were provided. Substantial quantities of food for American forces were also received from New Zealand.

Reverse lend-lease procurement in India showed a sharp rise during the past year. Cash purchases were reduced to nominal proportions. At the end of the year, however, the Indian Government proposed to reduce the production of military goods in order to provide more goods for the civilian economy and thereby counteract the inflationary tendency in that country.

Supplies and services were received from the French National Committee of Liberation and in smaller amounts from the Belgian and Netherland Governments. Under an agreement with the French National Committee signed on 25 September 1943 American forces obtained supplies, services, and facilities in North and West Africa estimated to have a value of more than \$30,000,000.

Although reverse lend-lease obtained by American forces overseas ranked first in volume and importance, the War Department continued to receive equipment, patent rights, and technical information needed for use in this country. Experimental models of many different types of equipment were sent to this country for use in the research and development program of the ASF. Upon one occasion certain vital

electronics equipment desired in the southwest Pacific was obtained from the United Kingdom under reverse lend-lease, flown to this country, and then flown to the Pacific. Training films, batteries, radio tubes, transmitters, and other equipment were also provided.

With the growing importance of reverse lend-lease procurement, greater emphasis was placed during the year upon coordinating the activities of Army general purchasing agents in the principal theaters of operations. There were frequent exchanges of personnel in order to develop uniform policies and procedures. Information on policy developments in the United States was sent to general purchasing agents to aid them in their operations. These agents in turn sought the assistance of ASF headquarters on many different questions. Quarterly reports on the anticipated volume of reverse lend-lease procurement overseas were begun during the year. These reports were used to adjust procurement programs within the continental United States. With general purchasing agents devoting their efforts to the most efficient development and utilization of the productive resources of overseas areas, the importance of reverse lend-lease promised to increase still further.

Civilian Supply

During the fiscal year 1943 the Joint Chiefs of Staff decided that military authorities overseas would be responsible for civilian supply in any given area during the period of active military operations. In November 1943, the War Department was instructed to plan for the shipment and distribution of civilian supplies not only in connection with military operations but also in the event of German collapse. This procurement program was executed by the Army Service Forces.

In providing civilian supplies the War Department limited its procurement to those supplies essential for military operations and to prevent disease and unrest among the civilian population. If this were not done, all military operations would be jeopardized behind the lines. The supplies provided consisted principally of food, medical and sanitation items, fuel, and public utilities repair items. Within these categories the number of items and the quantities were held to necessities. For example, the agreed-upon basic ration provided for each person in one day came to 2,000 calories. The normal ration for a person in the United States was over 3,000 calories.

For planning purposes it was decided that the period of military responsibility for civilian supply would be 6 months. With assault operations, however, the total period of supply would probably exceed 6 months because of the necessity to protect lines of communication as the operation extended into new areas. This was true in Italy by the end of the fiscal year. Planning also included a program of maximum utilization of local supply sources. Rehabilitation equipment was provided for those facilities which, when production was resumed, would decrease import needs. Coal-mining equipment was sent to Italy, for example, as well as seeds and fertilizer.

The work of planning for civilian supplies was directed by the Combined Civil Affairs Committee of the Combined Chiefs of Staff.

Details on food, medical supplies, utilities equipment, and transportation were prepared by the Quartermaster General, the Surgeon General, the Chief of Engineers, and the Chief of Transportation. The Army Service Forces presented to the Combined Civil Affairs Committee its estimate of minimum requirements for chosen areas. Recommendations were also obtained from other government agencies and from overseas commanders. When requirements were agreed upon, procurement was started and supplies shipped overseas. The Army Service Forces advised the Combined Chiefs of Staff on such matters as supply availability and transportation capacity.

In providing civilian supplies for Italy, the principal area occupied by the American forces during the year, several major problems were encountered. In the first place, the territory occupied was a deficit area. The major industrial and agricultural areas of Italy were in the north and remained under German occupation. Another major difficulty encountered was black-market activity. Long years of Fascist rule plus a traditional attitude of evasion of legal controls encouraged more illegal transactions than might otherwise have occurred. Extensive black market deals increased import requirements because the high prices stimulated hoarding in anticipation of even greater profits. The demoralized state of local government added to the difficulties in delaying the installation of effective controls. By the end of the fiscal year the situation had greatly improved, since supply requisitions upon the United States were declining.

The extent of civilian supply was also influenced by the amount of destruction occurring in military operations. In Sicily and in southern Italy such destruction was considerable. The destruction of port warehousing and transportation facilities particularly affected the distribution of civilian supplies.

During the fiscal year shipments overseas for civilian supply were of four main categories: Foodstuffs including wheat and flour, dehydrated soup, dried beans and peas, canned meat, sugar and evaporated milk; fuel; medical and sanitation supplies including soap and other individual items; and miscellaneous supplies such as paper, clothing, and some manufactured items. Altogether the United States shipped more than 500,000 tons during the fiscal year to Italy at an estimated dollar value of over \$81,000,000. On a tonnage basis 96 percent of all supplies were foodstuffs.

In order that the Army Service Forces might meet requisitions upon it for civilian supply, it was necessary to program requirements well in advance. Estimated needs by country and area at assumed dates and under assumed conditions were calculated. The basic plan for civilian supply in Europe was completed before invasion of the continent on 6 June. Initial planning for the Pacific area was begun before the end of the fiscal year. After the advance planning had been completed, calculations were related to actual needs through the overseas commands and the Combined Chiefs of Staff. Actual quantities shipped were determined by the overseas theater. The Combined Civil Affairs Committee allocated sources of supply and supply responsibilities. Theater requisitions were submitted in accordance with these decisions.

In all civilian supply activity a number of civilian agencies of the United States Government worked closely with the Army. These in-

cluded the State Department and the Foreign Economic Administration. For certain civilian supply operations the War Department agreed to procure and ship necessary quantities with funds provided from civilian agencies. Civilian supply after the period of military operations or in addition to that provided by the Army was a responsibility of civilian agencies. Other agencies which assisted the Army in planning its civilian supply activities were the War Food Administration, the War Production Board, the War Shipping Administration, and the United Nations Relief and Rehabilitation Administration. By the end of the fiscal year techniques had been developed which enabled the Army Service Forces to handle civilian supply problems as easily as military supply.

Chapter 5. SUPPLY IN THE ZONE OF THE INTERIOR

The distribution system for the supply of troops in training in the United States or under defense commands was not altered during the fiscal year 1944. The soldier continued to receive his individual equipment at the reception center. This included clothing, gas mask, toilet articles, and mess equipment. At replacement training centers the soldier received training equipment issued by the training center. When soldiers were organized into troop units, equipment and supplies were provided by the post where the unit was stationed. Reception centers and supply warehouses at training centers and other stations were operated by service commands. In turn these stations drew their supplies from depots operated by the technical services. The system of automatically providing supplies for newly activated units continued to work satisfactorily.

Certain items of equipment of particular importance or in short supply remained on the controlled equipment list. At the beginning of the fiscal year 1944 there were 695 items of issue on this list. When units were activated, the normal practice was to provide 20 percent of authorized allowances of controlled equipment. Divisional units in B priority received 50 percent of authorized items. When a unit was designated for overseas shipment and received an A priority, special effort was made to provide full authorized allowances of controlled items of equipment. When a unit was placed in A-4 priority indicating shipment within 6 months, shortages of noncontrolled items of equipment were supplied by the post where the unit was located. On controlled items of equipment a shortage report was submitted to the chief of technical service concerned. When a unit reached A-2 priority, final inspections were held and final shortages made up. Priority ratings for units were indicated by the War Department General Staff.

The controlled equipment list was revised every 3 months during the fiscal year 1944. By the end of the year the number of controlled items had been reduced 50 percent. Some of the major items no longer on the controlled equipment list on 30 June 1944 included the carbine, the M-1 rifle, automotive vehicles, public address systems, and skid-mounted 750-gallon tanks. With increasing supplies available it seemed probable that the number of items on the controlled equipment list could be further reduced from the 343 remaining at the end of the year.

Until 15 June 1944 the Army Service Forces handled the distribution of certain items of Air Corps equipment and supplies. These included small observation planes used by field artillery battalions at field artillery headquarters; the spare parts, parachutes, and flying clothing used by field artillery pilots; and parachute assemblies and aerial delivery containers for air-borne troops. When units were activated requiring Air Forces equipment, a request was sent by the

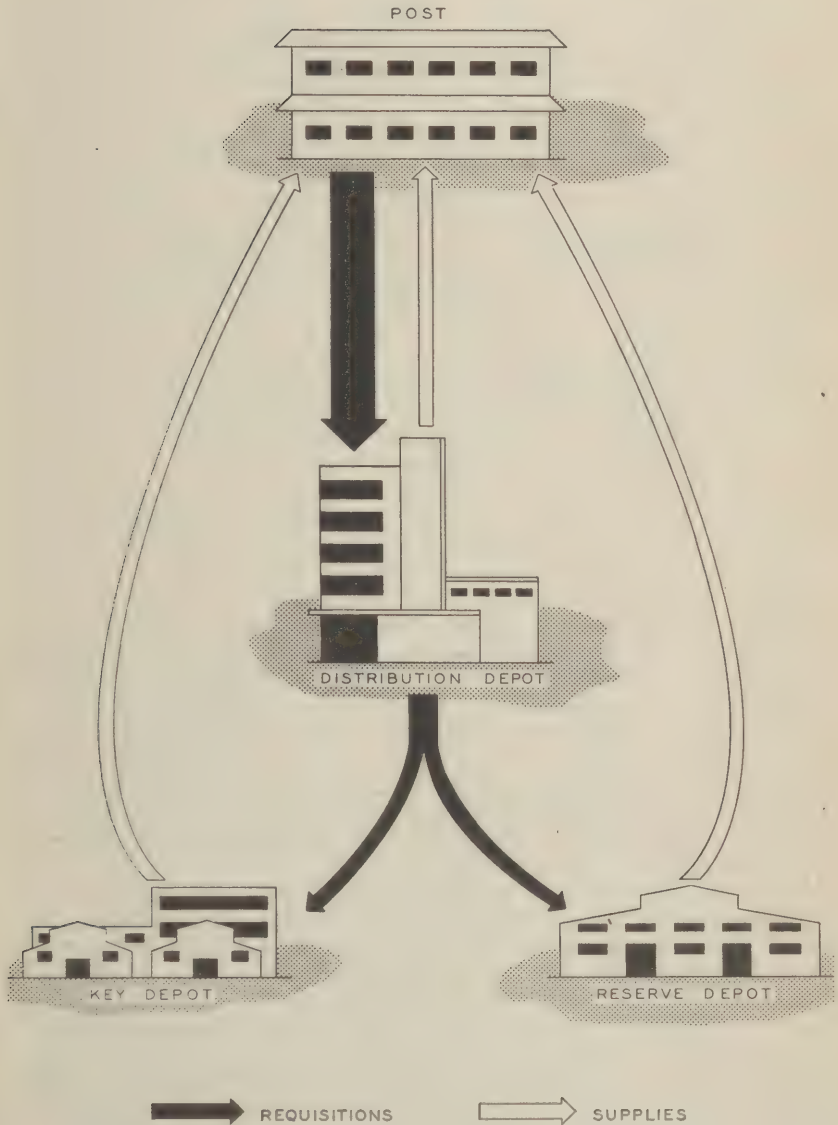
Army Service Forces to the Air Service Command to forward equipment to the appropriate Ground Forces station. Two weeks before the end of the fiscal year entire responsibility for distributing Air Forces equipment to authorized ground units was transferred to the Army Air Forces. Up to that time the Army Service Forces was ahead on all preshipment programs and had been able to insure that ground units moving overseas were 100 percent equipped with authorized items.

Particular efforts were begun toward the end of the fiscal year to increase the distribution of substitute and limited standard equipment in order to prevent the accumulation of sizeable stocks of unused supplies. As changes were made to improve the quality of weapons and other military equipment, the latest model became the authorized issue to troops. Stocks on hand of previous models then became limited standard items or substitute items. Naturally troops preferred to have the latest model. On the other hand, unless the differences in performance were so vital that they might affect results of military operations, there was no reason why the previous model should not be used up before the latest model was issued. For this reason the Army Service Forces inaugurated an extensive program to issue substitute and limited standard items.

As tables of organization and equipment were revised, the ASF recommended that substitute items be issued until exhausted. Each technical service set up an officer possessing a thorough working knowledge of the physical characteristics and military employment of equipment to review existing supplies for all expensive items with substantial stock in depots. This officer prepared a list of possible substitutions for standard equipment. The possibility of utilizing the component parts of substitute items was also considered. Wherever modification might make a limited standard item a practical substitute for standard equipment, the matter was referred to the Research and Development Division of ASF. This entire program was well under way by 30 June. It was expected to play a substantial part in reducing supplies of limited standard items accumulating in depots.

With more and more equipment overseas and used in training in the United States, the problem of spare parts became of increasing importance. There were several aspects to this problem which will be mentioned at appropriate places in this report. One problem was to insure the adequate distribution of spare parts where needed. In July 1943 complete spare parts for equipment were supplied by depots when the equipment was shipped overseas. These spare parts included those required for all echelons of maintenance. In September the previous practice was halted in favor of shipments of spare parts broken down by the appropriate echelon of maintenance. In other words, the spare parts which might be used by the operator to replace worn parts accompanied the equipment itself. Second echelon spare parts for emergency field repairs were packed separately for distribution to battalions and regiments in the field. All other spare parts were broken down for shipment to maintenance organizations and as field depot stocks. After initial distribution of spare parts, all further supply was by requisition only. Within the zone of the interior the supply of spare parts from depots was made by requisition. The new distribution system for spare parts meant numerous adjustments in

CHART 13
REQUISITIONS FOR POSTS,
CAMPS AND STATIONS



the shipping practices of depots. It also affected storage and stock control operations. The system as adopted in September 1943, however, proved to be the only feasible one for distributing spare parts.

Initial Movement Overseas

As units were scheduled for overseas movement, considerable effort was necessary to insure that all items of supply were provided. During the past fiscal year hastily arranged transfers of equipment from one unit to another were for the most part unnecessary. Only a few such transfers were arranged. There continued to be emergency shipments to meet stepped-up commitments for overseas movement. One of the largest undertakings in the latter part of the fiscal year was the supply of bomber wings of the 20th Air Force operating the new B-29 flying fortress. Special procedures on short notice were established to insure that all equipment supplied by the Army Service Forces was available for these wings as they moved overseas. Thirty-day dead lines for shipment of equipment to ports of embarkation had to be established. Special reports were provided the Commanding General of the Army Air Forces each week on the status of this equipment. Express shipments and air shipments were necessary to meet dead line dates at ports of embarkation. All deadlines, however, were met.

During the fiscal year 1944 the result of the previous months' planning and experience was reflected in the smooth and efficient manner in which troops were moved overseas. Movements were accomplished with fewer complications, postponements, or disruptions despite the great increase in numbers.

In 1944 the Army Service Forces prepared movement orders for 8,738 units ranging from independent companies to divisions. Of this total, 3,419 were Army Ground Forces units, 3,393 were Army Service Forces units, and 1,921 were Army Air Forces units. The total strength of all these units numbered about 2 million men.

Movement orders were prepared for all these units by the Army Service Forces because actual transportation and supply arrangements for these units was a responsibility of the ASF. For various reasons most units were not completely equipped by the time they left their home stations. Chiefs of technical services were then given instructions on what supplies to ship and how to mark them. Ports of embarkation were told what supplies to expect and what to do with units and their equipment as they arrived in staging areas and at ports. A single movement order might require 10 or 12 pages even though the unit contained only 100 individuals.

Originally developed as an enclosure to movement orders, the procedures entitled "Preparation for Overseas Movement" (POM) were revised on 1 August 1943. The principal change introduced was to provide greater assistance by station commanders and service commands for unit commanders in inspecting supplies and meeting shortages. In addition, the procedures made higher headquarters of the AGF, AAF, and ASF responsible for seeing that unit commanders complied with all of the duties required under POM. It was further specified that two separate lists of equipment shortages would be submitted. Shortages of controlled items of equipment were to be submitted as soon as a unit was placed in the A category, thus insuring

ample time for delivery of the items. Lists of shortages of other equipment were submitted by a unit only when it received a movement order some 2 or 3 months before its departure. A training film was produced during the year to acquaint officers and enlisted men with the full importance of preparation for overseas movement.

Instructions to units on the marking and numbering of packages were included in POM. The preparation of necessary papers to accompany shipments was specified in a separate document "Identification of Organizational Impedimenta" prepared by the Army Service Forces and published on 10 August 1943.

A major supply problem in preparing units for overseas movement was the issue of clothing in the period between receipt of movement orders and the departure of a unit overseas. As much as 2 or 3 months might intervene between these dates. If clothing was replaced at the time of the first show-down inspection after receipt of the movement order, it might have to be replaced again in the staging area immediately before units embarked. The 1 August 1943 revision of POM stipulated that a soldier was to retain certain garments such as shoes, work clothing, and underwear in excess of allowances until the last few days before embarkation. In order to standardize the flaws that rendered clothing unfit for combat service, War Department Circular 277 was prepared and issued in November 1943. Specific justifications for declaring an item unserviceable were indicated. For example, a raincoat might be declared unserviceable because of tears, open seams, excessive stiffness, deterioration of coating, or badly worn buttonholes. This circular was helpful in reducing disagreements between unit officers and station supply officers on clothing serviceability; it still did not meet the problem of clothing deterioration in the 2 or 3 months when a unit was preparing for overseas movement.

An investigation by ASF headquarters revealed that certain divisional units were reequipped with clothing five times between their arrival at a concentration area and their departure from the United States 4 months later. At an ASF replacement depot casualties were issued new clothing when they arrived and received another new set when they departed 2 or 3 weeks later. This practice became so serious that large accumulations of worn clothing began to pile up at concentration areas and staging areas. This practice was not only wasteful of new clothing and equipment but also placed a strain upon laundry and repair facilities.

An experiment was conducted by the Army Service Forces in the winter of 1943-44 in the replacement of all items of individual clothing and equipment at staging areas rather than at home stations. This practice proved feasible, but its adoption would have required additional storage space and supply personnel at staging areas. Neither was available to the Army Service Forces. Consequently a different solution was sought. Clothing classifications were changed so that troops going overseas did not necessarily receive new equipment immediately before departure. The work in establishing new standards was completed before the end of the fiscal year but the instructions were not issued until after 30 June 1944.

The adoption of the preshipment program for the movement of supplies and equipment in advance of unit sailings made it necessary to modify previous provisions of movement orders. Although basi-

cally similar to the previous type of order, the new orders became increasingly complex as they provided details about overseas availability of supplies for the moving unit. It proved impossible to curtail the actual length of the orders.

In the early days of the war, units were frequently chosen and shipped from their home station on very short notice. During the past fiscal year it was generally possible to plan movements well in advance of their actual occurrence. Upon receipt of commitment lists from the General Staff, the ASF began to plan the necessary steps for their movement. In addition, the ASF designated the units trained by it to meet overseas demands. With a revised 6 months' forecast of unit movements available, the ASF was able to handle supply and movement details with increasing efficiency.

Under the guidance of the War Department General Staff special steps were taken to safeguard knowledge about overseas movements. All units moved to and from overseas areas under shipment numbers. These numbers were maintained and assigned by ASF headquarters. Careful standards were set up in the spring of 1944 to indicate what elements of rail and motor movements would be treated as secret, confidential, or restricted.

A record was maintained of all movements proceeding overseas. This record gave full information about each step in the movement. After troops were shipped overseas, a record of the unit and its strength was maintained to serve as a guide in subsequent supply support. In November 1943, the ASF began publication of an overseas troop list for operations and supply. This list was issued monthly. Its preparation was transferred to the General Staff in June 1944.

During 1944 packing squads were organized in each of the nine service commands of the ASF to assist units in packing and crating their equipment for overseas movement. One such squad was dispatched overseas at the request of an overseas commander. In one service command, the First, one packing squad in the fiscal year 1944 helped 109 different units to pack their equipment and supplies. For 90 of these units the entire operation was handled by the packing squad. Crating requirements ranged all the way from 200 board feet of lumber for one WAC unit, to 140,000 board feet of lumber for an engineer sloop battalion. Another packing squad assisting a division was called upon to supervise the prompt construction of 7,800 boxes using approximately 200,000 board feet of lumber and 9,000 pounds of nails, paper, and strapping.

During the fiscal year 1944 the volume of casual replacements moving overseas in order to maintain units at their full strength reached sizeable proportions. For this reason it became necessary to prepare a new set of instructions on Preparation for Overseas Replacements (POR). Modeled after the instructions for unit movements, the new procedure set up a standardized practice for supply and movement of single individuals in casual detachments from replacement depots to staging areas to ports of embarkation for overseas shipment. In addition to POR, the ASF published at intervals of several months an up-to-date chart showing the proper modification of clothing and individual equipment necessary when casualties were destined for a particular overseas base.

Depot Missions

The storage space requirements of the Army Service Forces immediately after Pearl Harbor were met by rapid expansion of depots throughout the United States. These depots filled the needs both of ports of embarkation and of stations in the zone of the interior. During the rapid expansion of storage facilities it was impossible to plan an integrated system which would meet all supply needs. Frequently stocks were scattered in many different depots and there was some confusion about the responsibility of a depot to supply particular installations. Often one depot without required supplies was uncertain where to transmit requisitions so that they could be filled.

In order to meet this situation the Army Service Forces during the fiscal year 1944 established a carefully defined depot system. The first step was to classify depots by type of mission. In general, four major categories were used: Filler, distribution, reserve, and key or master depots. A filler depot had the function of holding supplies for shipment to a particular port of embarkation. A distribution depot was the source of supply for posts, camps, and stations within the zone of the interior. A reserve depot stored items in bulk for special purposes; generally it made bulk shipments to other depots or directly to stations or to ports of embarkation. A key or master depot stored selected items centrally which were not suitable for storage at filler and distribution depots. In general it was intended that filler and distribution depots should be stocked with fast-moving items, while slow-moving items and items of critical supply were to be concentrated in key depots.

This classification of depot missions was transmitted to each technical service with instructions to indicate the depots which would fulfill each of the assigned missions. This information was reviewed in ASF headquarters, adjustments made, and finally approved. No depot missions might be changed without the prior approval of the Director of Supply of the Army Service Forces. In some instances selected depots might perform more than one mission; the nature of its functions was still clearly differentiated. At the end of the fiscal year the Army Service Forces had 61 depots designated as distribution depots, 60 designated as filler depots, 73 reserve depots, and 55 key or master depots. In addition, there were certain miscellaneous storage facilities including holding and reconsignment points and assembly depots.

With the classification of depots by basic mission, special efforts were made to insure that each depot was stocked with the items appropriate to its mission and that it was not filled with other items. As rapidly as possible slow-moving items were concentrated in key depots. One result of the clarification of depot missions was a more rapid satisfaction of requisitions and the avoidance of numerous extractions or back-orders.

No distribution system, however, could remain static. The changing supply requirements of the Army, changes in the locale of training, shifts in combat operations overseas—all required adjustments in the distribution of supplies.

In order to insure that the depot system would meet the demands placed upon it, a revision of the long-range planning of supply storage and movement was begun during the fiscal year. On the basis of the

latest logistical plans for future military movements and operations, the Director of Supply computed necessary quantities to meet overseas and domestic requirements 1 year in advance. These requirements were translated into tons which must be moved in and out of particular depots and through ports of embarkation in order to sustain the entire war effort. Attention was given to the probable changes in the mission of particular ports of embarkation. With this information on hand, the Director of Supply was able to forecast the load requirements to be handled for each depot in the zone of the interior. Deficiencies in depot space in particular localities were identified as well as excess space at other points. Plans were prepared for the reallocation of space among technical services in order to meet anticipated requirements. Labor was to be recruited and maintained on the basis of maximum utilization of existing facilities. By the end of the fiscal year projected depot missions for a year in advance had been determined and future load computations had been completed.

Stock Control

Just before the close of the fiscal year 1943 the Army Service Forces established a new system for controlling supplies carried at posts, camps and stations, and at depots. The system was placed in operation by taking a physical inventory of all stocks at posts on 29 May 1943, and by transferring these data and other records to a new stock record form. This form was designed to furnish the necessary information to post supply personnel about supplies to be maintained at a particular installation. The most important aspect of the stock-control system was the change it required in post supply thinking. The emphasis was no longer on accountability but upon proper stock management. A vigorous educational campaign was necessary in order to realize this fundamental change in concept.

Early in July 1943, it was possible to evaluate the results of the inventory. A number of items of controlled equipment was found in station stocks. Certain depots found supplies which the records indicated they had not had for some time.

Supervision of the new stock-control system at the post level was vested in service commanders. In order to check performance at stations and to coordinate the work of depots with posts, a number of visits were made to the field by ASF Headquarters personnel. These inspections indicated step by step progress but revealed that post personnel did not appreciate the overall problem of stock management. Station levels were still being set in excess of actual needs. This meant that supplies procured for the Army were being held in station stocks and were not readily available through depots for issue to all using installations. The "hoarding instinct" had to be broken down by giving assurance that supplies would be readily available on call from depots for all concerned. The reduction of levels from as much as a year's supply in some cases to the authorized 90 days' on hand and on order was a distinct worry to post supply officers who refused to believe that they could meet demands upon them with a lesser amount.

In order to bring home the importance of the new stock control system to both service commands and technical services, a conference

was held at Cincinnati in October 1943. At this time all service commands were impressed with the necessity of strict supervision of the management of station stock records and supplies. Unless there was proper management at the post level within the United States, the supply mission of the Army Service Forces could not be met. Depots in turn were required to give assistance in reducing station stock levels in order to bring them into reasonable relationship to needs.

A system of field inspection was established by the Army Service Forces in November 1943, to check periodically the progress in stock management and to assist in the education of station and service command personnel. Deficiencies in operation were pointed out to depots and to service commands. These inspections revealed that depots were using the stock status report on a mathematical basis in establishing station stock levels. This was not sound since station commanders had more data on which to base their anticipated requirements than did the depots. Furthermore, responsibility for setting stock levels was supposed to rest with the station commander while depots were expected to assure consistency between different stations within the depot area. This difficulty was corrected by requiring depot personnel to visit each station at least once every quarter to revise stock levels on the ground with the cooperation of station personnel.

The importance of returning excess station supplies to depots was called to the attention of station supply personnel when the stock control system was originally set up. It was further emphasized during field inspections and in an ASF circular issued early in January 1944. Stock status reports showing the position of all stocks at a station proved a burden to post personnel and to all services except Quartermaster. The need for reporting all stocks was felt to be unnecessary. Consequently, stock status reports were discontinued in February 1944, and excess reports substituted for them. The excess report indicated only those items in excess to the station level and served as a means for recalling these excesses to depots.

Station supply levels were again reduced by War Department directive in January 1944. Henceforth, only 45 days' supply needs might be held at a station rather than the original 90-day maximum level of stock on hand and on order to maintain this 45-day level. ASF Circular No. 54, on 21 February 1944, authorized stations to establish a control level of 60 days' supply on hand and on order; actual stocks on hand were to remain at a maximum of 45 days of anticipated needs. Stations were authorized to determine the 60-day control level by fixing it at two-thirds of the then established 90-day maximum stock level. Requisitions for replenishment of supplies were placed whenever the quantity on hand and on order was less than three-fourths of the station control level.

Further checks and inspections by ASF headquarters provided the education to station and depot personnel necessary to obtain a more uniform operation of the system. The Army Air Forces maintained command control of all supplies at air stations but ASF depot personnel reviewed and approved station stock levels at Air Forces posts.

As a result of close cooperation between ASF Headquarters, service commands, and technical services, the Inspector General reported that stock control at stations was generally effective within 1 year

after the institution of the system. Reports showed that the dollar value of subsistence inventory per individual at 31 selected stations, for example, decreased from \$15.22 in September 1943 to \$9.71 on 31 May 1944. The strength of these 31 stations represented 22 percent of the total troop strength in the United States at the end of the fiscal year.

Supplies carried as inventories at depots were established by the chiefs of technical services. Generally there was little relationship between the needs of the depot and the supply level established. War Department Circular 85 on 25 February 1944, provided in effect that depots might maintain a 60 days' supply of items for issue to posts and overseas plus the various reserves then authorized—strategic, contingency, utility, and production reserves. The computation of these levels and reserves proved such a monumental task that the Army Service Forces obtained a revision in policy which was announced by War Department Circular 206, on 24 May 1944. Thereafter, depots were to carry as inventory a 90-day supply plus a strategic reserve. Chiefs of technical services began to establish the new levels at the end of the fiscal year with the prospect that depot levels for all items of equipment would be met by December 1944.

At the end of the fiscal year additional steps were taken to reduce the volume of supplies held at different stations. On 6 June 1944, ASF Circular 171 announced the intention to eliminate all intermediate supply points between depots and stations. A number of Ordnance service command supply points had been established to centralize particular types of supplies, especially spare parts, above the post level but below the depot. In this way it was hoped to prevent shortages in particular posts while ample supplies were available at another post within the service command area. This practice was no longer necessary after depot functions had been carefully defined. Moreover, the practice tended to increase the accumulations of supplies within the United States. Accordingly, the functions of existing Ordnance supply points were absorbed by station supply activities at a post. Some posts and other installations might be assigned by a service command to stock only fast-moving items and to draw other supplies from another post in the vicinity.

Under authority granted by the War Department the Army Service Forces provided that certain activities might carry model stocks within over-all station control levels. Ports of embarkation were authorized to carry 15 days' supply of fast-moving items in order that these would be available for issue 24 hours a day. Repair shops located at stations were permitted to carry 10 days' supply of fast-moving parts. Medical dispensaries apart from a post carried 15 days' supply of expendable medical items. Laundries were also permitted to carry 15 days of laundry supplies. Finally, satellite installations might carry a model stock of 15 days' supply.

As a result of visits of headquarters representatives to various depots, progressive improvement was noted in stock control efficiency. At the end of the fiscal year all the revised levels were in effect.

The most difficult single stock control problem was that for spare parts. The great number of items stocked required the maintenance of extensive stock records. Frequently the lack of standard nomenclature caused identical parts to be stocked under different identifica-

tion numbers and shown on separate stock record cards. Sheer bulk made spare parts stock control a continuing difficulty.

With increasing emphasis upon the flexibility of supply, exact knowledge about the location of all items was essential. Stock records at posts controlling the amounts held and stock records at depots showing quantities on hand and due in were vital parts of the stock-control system. The capstone, however, was a single stock record showing for the zone of the interior as a whole the quantities which were being held at various depots. During 1944 central stock control points for many items were set up at field offices or depots outside Washington. For certain important items central stock records were still kept at headquarters. Central control points for spare parts entailed, of course, the largest amount of record-keeping.

The gravity of the spare parts situation overseas led the Army Service Forces to invite representatives from overseas theaters to return to the United States and review their spare-parts problems. These conferences were held during February and March 1944. Little was learned which indicated the need for remedial action in the zone of the interior. Certain priority ratings for a few theaters were revised in order to insure a supply of spare parts. Spare parts difficulties overseas centered around the lack of adequate spare parts records in the theaters and a scarcity of men technically trained to handle spare parts. Theater representatives spent some time at ports in order to gain a thorough understanding of requisitioning and shipment practices. War Department Circular 227 issued on 7 June 1944, placed upon overseas commanders specifically the responsibility for establishing necessary stock records in controlling the distribution of spare parts within their commands. Conservation of parts was emphasized.

All technical services made substantial improvements in handling spare parts before the end of the fiscal year. Stock records were improved and coverage enlarged, standard nomenclature was adopted, and improved storage methods helped to alleviate apparent shortages. Within the Signal Corps, for example, a standard stock control nomenclature eliminated some 14,000 of the 20,000 stock numbers previously assigned to common components. There continued to be distribution difficulties in the spare parts situation throughout the zone of the interior.

As a part of the educational program to acquaint depot and post personnel with the purposes and operation of the stock control system, film strips were developed during the year to show proper posting of stock record cards and the methods used in determining stock control levels. These film strips were shown to all supply personnel at posts and at depots. Preparations were also made for a movie depicting the importance of proper stock management.

Because of the large demands for some items of equipment, especially spare parts, the ASF had to establish a system whereby all theaters and the zone of the interior would share in the limited available supply. The available supply was divided among theaters according to the importance of the theater. The system that was finally developed was called "short stock control" and provided a rationing system. Short stock items were determined by the chiefs of technical services and the rationing system gave each theater its proper share of the limited supply.

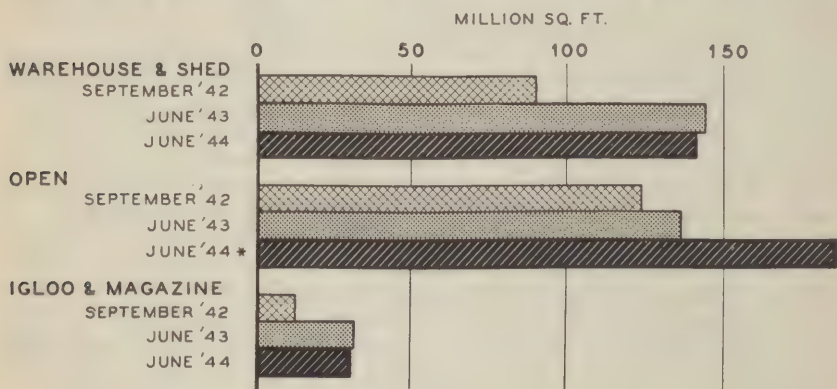
As army posts were closed, special efforts were made to return stocks to depot control as rapidly as possible since only in this way could items be made available for other use and reduce necessary procurement. Supplies located at posts which were transferred to the Navy or to the Veterans Administration were often transferred with the post. This was particularly true of medical supplies and repair and utility items.

Storage

Although the volume of tonnage handled by depots of the Army Service Forces was 11 percent greater at the end of the fiscal year 1944 than at the beginning, the amount of storage space remained practically constant. On 1 July 1943 the gross available space was 317,631,000 square feet, of which almost one-half was covered. By 30 June 1944 the amount of storage space in operation had increased to 362,212,000 square feet. The only category to show sizable increase was open hardstanding space. The accompanying chart shows the amount of space available by major categories throughout the year.

CHART 14

GROSS STORAGE SPACE IN OPERATION AT DEPOTS



* OPEN HARDSTANDING PLUS UNSURFACED OPEN AREA ONLY TO THE EXTENT OCCUPIED

By 30 June 1944 there were 11 ASF depots occupied by 2 or more services. In addition, the Ordnance Department had 8 ammunition depots and 39 other depots; the Signal Corps had 9 branch depots; the Corps of Engineers 10; the Chemical Warfare Service 5; the Medical Department 9; the Quartermaster Corps 18; the Transportation Corps 4; and The Adjutant General's Department 8. Seven of the 9 AGO depots were operated by the service command in which they were located.

At the beginning of the fiscal year it was decided that from an overall point of view there was sufficient storage space, existing or projected, to meet the space requirements of the highest projected Army strength. This storage space, however, had been located and constructed largely by the different technical services on the basis of their individual rather than their collective needs. Certain services were overstocked with space in one area while understocked in another.

Excessive transportation, handling, delay, and other waste resulted. For these reasons the Army Service Forces decided that all space must be considered as common to all services and that a pool should be created from which allocation and reallocation could be made as the need arose. During the fiscal year 97 changes of space were made between technical services, involving over 12 million square feet of warehouse space and 14½ million square feet of open space. As a result of these readjustments it was possible to reduce requests for construction of covered space by some 6 million square feet and of open space by some 10 million square feet. Approved construction was located in those areas of the country where over-all available storage facilities were inadequate to meet military needs. During the year some 4.7 million square feet of space not currently required were turned over by the ASF to the Army Air Forces; and 323,600 square feet were made available to the Treasury Department.

At the beginning of the fiscal year 53.9 percent of the net usable space in all depots was occupied; at the end of the year about 65 percent of the net usable space was occupied. By the end of the year 69.6 percent of covered space was occupied while 52.4 percent of open hardstanding space was occupied. The largest proportion of total space was occupied by the Ordnance Department, which at the end of the year had some 132 million square feet of space; the Corps of Engineers had 62 million square feet; and the Quartermaster Corps had 52 million square feet. Some 20 million out of a total of 27 million square feet of storage space utilized by the Chemical Warfare Service was specially prepared for the storage of toxic gases.

An item of major importance in realizing maximum utilization of depot facilities was a reduction in space not used for storage purposes. At the beginning of the fiscal year 1944, 68.3 percent of all storage space was usable for storage purposes. The remaining space was required for receiving and shipping areas and aisles. At the end of the fiscal year about 75 percent of gross space was available for storage purposes. The establishment of controlled warehouse plans and rigid supervision brought about the greater ratio of net usable to gross storage space.

In order to provide a basic comprehensive handbook on modern warehousing methods, an ASF manual entitled "Depot Operations: Storage" was prepared and published in November 1943. This manual gave detailed information about space lay-out; the receiving, storing, and shipping of supplies; the use and maintenance of materials handling equipment; and personnel management at depots.

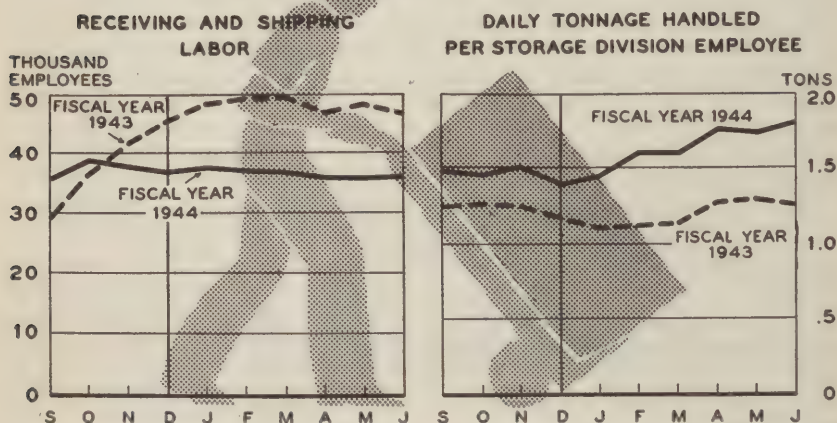
This manual was not only used throughout the ASF but was put into use by the Army Air Forces, the Navy, and by a majority of overseas theaters. Supplements were issued on the storage and handling of hazardous items and on the storing and packing of engineer supplies. Other supplements were in preparation at the end of the year. The entire manual was being revised at the end of the fiscal year for publication as a War Department technical manual applying to the Army Air Forces and to camps, posts, and stations as well as to depots of the Army Service Forces. A comprehensive manual on overseas storage was also in preparation as well as one on the storage and issue of spare parts in overseas theaters. Other manuals were being prepared on industrial storage, the demolition of storage

in theaters, on depot organizations, and the operation of depots in communication zones overseas.

The increased operations at depots in the United States were realized during the fiscal year without any increase in storage personnel. The accompanying chart shows that an 11-percent increase in tons handled by depots was accompanied by a 24-percent decrease in receiving and shipping labor. At the beginning of the fiscal year a Nation-wide horizontal cut was directed in the number of depot employees. This made it imperative for each depot to increase the individual efficiency of its existing personnel. By the end of the year each worker was handling 55 percent more tonnage than the average worker handled in 1943. If this increase in efficiency had not taken place, the receiving and shipping force of some 36,000 employees at the end of the year would have numbered over 56,000 persons.

CHART 15

STORAGE OPERATIONS



At the beginning of the fiscal year some 3,243 fork-lift trucks were being used by all depots of the Army Service Forces. This number had increased to 4,830 by the end of the year. During the same period the number of towing tractors increased from 1,996 to 2,321. During the 12 months a total of 27,978 units of power-operated materials-handling equipment became available to the War Department. This equipment was allocated by Headquarters, Army Service Forces. Some 45 percent of the total was made available for overseas use; 24.5 percent went to the Army Air Forces of which nearly half went overseas; and 16 percent were shipped under lend-lease. Only 14 percent of all equipment was assigned for use by the ASF within the United States. Close supervision of the use of fork-lift trucks, reallocation of the equipment according to needs, preventive maintenance, and training in efficient operating methods made it possible for ASF depots to handle 29 percent more warehouse and shed tonnage with no increase in personnel and only a 13-percent increase in the number of fork-lift trucks.

Oversea demands for mechanical handling equipment increased with the greater use of the palletized load introduced by the Army Service Forces during the fiscal year 1943. The generally rougher surfaces on which equipment operated overseas required pneumatic tired equipment. Estimated requirements were presented to the War Production Board and sizable numbers were available during the last half of the fiscal year. Assistance was given to the Navy in equipping landing craft with power trucks. Special diversions of equipment helped the United States Maritime Commission, the British Government, and the Russian Government. The first pneumatic tired equipment supplied the British was shipped directly to the Normandy beachhead. Estimated requirements of the Army and of lend-lease for power trucks were carefully screened during the year by ASF headquarters and a reduction of more than 41 percent in estimated requirements was realized. Production was increased by concentrating effort upon as few models as possible. The supply of spare parts was given special attention and by the end of the year these were available in substantial quantities wherever needed.

Increasing attention was being given at the end of the year to improvements in efficiency of storage operations at posts, camps, and stations. A storage officer on the staff of the commanding general of each service command was responsible for checking all storage practices. A conference was held early in 1944 to instruct service command storage officers in their responsibilities. Subsequent conferences were held for station storage officers in each service command.

A special conference was held in the vicinity of San Francisco to relieve the tight storage and manpower situation in that whole area. As posts were inactivated or declined in size, available storage space might be used by a depot to accommodate slow moving, excess or surplus stocks for which there was no depot space. Not only barracks but classrooms, recreation buildings, and mess halls were used for storage. No additional construction was intended. Particular care had to be observed to insure that floor loads were limited to the weight which the floor would bear. Supplies warehoused at a post were under the control of the depot and accountability remained with the depot.

In addition to the manuals already mentioned, numerous publications were prepared and issued during the year to aid in the on-the-job training of depot personnel. One manual provided the basic course on the fundamental principles and operating methods of warehousing. An inspirational motion picture was presented by the Signal Corps to bring home to every depot worker his direct share in the war effort. Many training aids developed by civilian industry, the Navy, and other agencies were incorporated into the ASF storage training program. In December 1943, publication was begun of an information bulletin entitled "Depot Improvements" as a medium for the exchange of local ideas for the improvement of storage stock control and maintenance operations. Materials for this bulletin were submitted by depot workers. The circulation rose from some 22,000 copies for the first issue to over 47,000 copies by the end of the year. A series of film strips was also prepared and was ready for issue by 30 June 1944.

Policies on such subjects as fire aisles, floor loads, in-bound car reports, pest control, warehouse lay-outs, design of box pallets, the manufacture of waterproof case liners, and other subjects not only standardized operating procedure but also trained warehouse personnel in their responsibilities. Monthly statistical data on space equipment and personnel at depots indicated storage performance by the ASF and also measured operating efficiency. These reports guided both educational effort and inspection activity. Early in the year primary attention was concentrated upon space requirements and availability. Later, attention shifted to available equipment and manpower shortages. Work measurement studies were begun to determine which depots were relatively overmanned. Other studies were made of receipts and shipment by geographical areas, the effect of port shipments on depot operations, depot maintenance costs, and the effect of fork-lift trucks on personnel requirements.

Six officers from the Storage Division in ASF headquarters were assigned as regular field representatives to visit depots, to inspect compliance with storage policies, and to give assistance in improving storage operations. During the fiscal year 1944 some 400 visits were made to depots throughout the country. The first function of these representatives was to assist depot commanders. The job of criticism was a "secondary one." Copies of their reports were made available to both depot commanders and to chiefs of technical services. Criticism was subsequently followed up to insure that corrective action was taken. The reports of inspectors assisted greatly in the reallocation of space and also of equipment. In addition, qualified packing experts were made available to depots to assist in establishing efficient packing and processing "assembly lines." At the request of two overseas theaters, the ASF sent two officers overseas to inspect depot storage operations and to make recommendations for improved operations. Subsequently officers from the ASF were permanently assigned to the staff of the Services of Supply of the European Theater of Operations and of the North African Theater of Operations to direct storage activities.

Because of the peculiar requirements of amphibious operations, particular attention during the past year was given to the development of palletized loads especially designed for use over beaches. With the cooperation of the Navy the Army Service Forces developed sled and toboggan type pallets which could be carried or towed across beaches to supply dumps. Tests indicated that these methods would reduce the number of personnel required for unloading supplies by 75 percent, as well as permit landing craft to be released more rapidly. A comprehensive training manual covering the complete operation from the loading of ships to the clearing of beaches was in preparation.

Attention was also being given at the end of the fiscal year to the responsibility for keeping supplies in storage in good condition. Instructions were issued in February 1944, pointing out that it was the responsibility of storage agencies to make sure that the supplies entrusted to them were carefully preserved. Special attention had to be given to the storage of motor vehicles. By the end of the year considerable progress had been made in the reduction of spoilage and deterioration of equipment remaining in storage. In general, the practice was adopted by all depots of "first in, first out" shipments.

While this complicated storage arrangements, since it required additional aisle space, it was the only possible way to prevent the accumulation of certain supplies for long periods of time in a depot.

From August 1943 to May 1944, an experiment in depot organization was conducted in the Atlanta ASF Depot. Storing supplies for five different technical services, this depot was organized along functional lines rather than by commodities. Operating statistics indicated that this type of organization provided definite economies over the type of organization where each section under the appropriate technical service was responsible for all phases of its own storage operation. The decision was made in January 1944, and announced in ASF Circular No. 10, that while the experimental integrated organization had demonstrated its feasibility, it would not be adopted throughout the ASF. The new type of organization would have destroyed the traditional system of supply whereby each chief of technical service was responsible for the storage and issue of the commodities procured by his service.

No major reorganization of ASF depot activities seemed desirable during wartime. In consequence, the depot commander of an ASF depot returned to the position of a landlord for the technical services operating space at an ASF depot. The depot commander was responsible only for guard, fire protection, general policies, utilities operations, transportation facilities, and such other administrative and overhead services as were common to the depot as a whole. Consolidated civilian personnel, fiscal, transportation, and utilities offices were continued at each ASF depot. The several supply sections of the Atlanta ASF Depot reverted to the chiefs of technical services on 1 May 1944. Thereafter the chiefs of technical services continued to be responsible for complete control of the stocks held at an ASF depot. Their officer at a depot directed the storage and issue of supplies.

In December 1943, commanders at ASF depots were directed to establish procedures so that no supply section extracted or back-ordered an item which was stocked by another supply section of the same depot. Immediate supervision of ASF depot commanders was exercised by the Office of the Quartermaster General.

Army Conservation Program.

The growth of the Army to its projected size and the increased equipment available for training caused the War Department in October 1943 to direct the Army Service Forces to establish the Army Conservation Program. This program was directed at the individual soldier who wore the shoes and clothing, ate the food, drove the trucks, and operated the weapons procured and distributed by the ASF. Through tested methods of advertising, every effort was made to impress upon each soldier the military necessity of taking proper care of his clothing and equipment and of avoiding waste of supplies and utilities. The Army Ground Forces and the Army Air Forces cooperated to insure complete and thorough coverage of all installations. A civilian organization, the War Advertising Council, placed its facilities at the disposal of the program and made available the services of the country's foremost artists, writers, and advertising talent.

Various media were employed: posters were distributed on a careful time schedule for display in barracks, day rooms, mess halls, kitchens, motor pools, and other places. Tags and stickers were attached to individual items such as clothes, shoes, or tool boxes. The posters were distributed both within the zone of the interior and overseas. By arrangements with the publishers, conservation messages were carried in the overseas editions of 11 popular magazines reaching soldiers in all parts of the world. Use was also made of radio programs broadcast to troops overseas.

Results of these publicity campaigns on behalf of the Army Conservation Program were difficult to measure. From time to time spot checks and tests were made. It was found that a small "switch it off" card attached to electric-light switches effected an average power saving of 5 percent in posts and camps throughout the country. A poster calling attention to a vehicle lubrication chart increased the demand for that chart by 600 percent. Another poster on the subject of shoe conservation mentioned a foot powder incidentally as an aid to foot comfort. There was an immediate 2,000-percent increase in requisitions for foot powder. Such examples as these indicated that the Army Conservation Program was influencing the average enlisted man.

Another indication of the influence of the program was found in the local conservation activity stimulated at posts and in unit commands. There was a large increase in the volume of conservation articles, cartoons, and features appearing in camp newspapers. More commanders at individual posts began local conservation drives and contests. Some commanders called attention to the importance of conservation in daily orders. Novel devices of many kinds were created at individual posts to demonstrate conservation lessons. The local interest initiative in preserving Army supplies not only added to the effectiveness of the program but indicated its cumulative effect in making all Army personnel conscious of conservation.

Chapter 6. RESEARCH AND DEVELOPMENT

During the fiscal year 1944 the efforts of the Army Service Forces to outmatch enemy weapons and equipment of every category were intensified. Particularly did the volume of research and development in the Ordnance field steadily increase. More than 300 separate Ordnance items were standardized during the fiscal year 1944; over 1,700 research contracts were awarded, as against 1,108 in 1943. There was scarcely a major piece of ground equipment used by troops in 1944 which was not new or different from that of 7 December 1941.

New and extensive tactical operations gave rise to a large number of requests for new or improved items of equipment to meet special requirements. Improvements in radar, new amphibious vehicles, chemical countermeasures, jungle warfare matériel, minefield detection and clearance, the overcoming of beach and underwater obstacles, the destruction of bunkers and other fortified positions—all these were the ends toward which developmental work was directed during the past year. High priority was given to projects designed to obtain greater concentrations of fire power, and to projects for reducing strongly fortified positions with the least possible loss of life.

Two methods were used during the year to familiarize theater commanders and other senior troop commanders with new equipment. One of these, the demonstration teams, has been previously mentioned. The other was a secret monthly publication, *Development*, which consisted of photographs, descriptions, and procurement information about newly standardized items and selected development items. This publication was begun in June 1943. Because this publication was a registered document and its distribution very limited, an additional publication with a lower security classification was needed, so that distribution could be extended to the commanding generals of all divisions and Air Force wings. To meet this need, the publication of *New Matériel*, a confidential monthly publication similar to *Development* but containing procurement information in general terms only was initiated in May 1944.

Although efforts were made to hold the number of development projects to a minimum, the requests for special equipment increased the program after January 1944. In June 1943, there was a total of 1,628 active development projects. This was reduced to 1,365 by December 1943. By the end of the fiscal year, however, the total had increased again to 1,600 active projects, of which 947 were Ordnance.

The expenditures for research and development work decreased slightly during the year, although the number of research contracts awarded by the Ordnance Department increased 35 percent. Development expenditures for the fiscal year 1944 amounted to approximately 180 million dollars; for the fiscal year 1944 they were 164 million dollars. All research and development activity was confined to

projects intended to realize major improvements in matériel before the end of the war.

As one additional means of correlating theater requirements with development work, a quarterly exhibit of newly standardized items of equipment and a selected group of development items was initiated during the year. This exhibit was made for the information of ranking War Department officers, who might evaluate usefulness in terms of the needs of forthcoming military operations. The initial exhibit was held 26 June 1944.

The Army Service Forces continued during the year to work closely with the Office of Scientific Research and Development. The director of the Research and Development Division in ASF Headquarters was designated War Department Liaison Officer with the National Defense Research Committee. At the close of the fiscal year, the NDRC was doing research work on a total of 318 projects for the Army. Of these, 58 were of primary interest to the Army Air Forces, 21 to the Chemical Warfare Service, 21 to the Quartermaster Corps, 19 to the Corps of Engineers, 101 to the Ordnance Department, 69 to the Signal Corps, 20 of interest to both the Army and the Navy, and 9 of a miscellaneous nature.

The National Defense Research Committee administered research and development on all or a substantial part of each of the following programs, including in some cases emergency limited procurement for operational uses: gun erosion, defensive structures, rockets, fuzes, fire control, explosives, chemical agents, incendiaries, amphibious vehicles, radar, infra red devices, sound problems of communication equipment, and land mine detection. Some idea of the contribution of this research activity can be gained from an estimate that the Army and Navy spent 2 billion dollars during the fiscal year 1944 for matériel which was developed primarily from projects of the NDRC.

Various ideas for new equipment or for modification of existing equipment continued to be received through the National Inventors Council. Of the 176,483 suggestions received by the Council as of May 1944, 7,115 were classified by the Council for further consideration by war agencies. Of those referred to the War Department for consideration, 27 were adopted and put into production. A suggestion for the use of a plastic carburetor for training purposes was adopted by both the Ordnance Department and the Corps of Engineers. Other suggestions adopted include a ruptured cartridge case extractor and a shell carrier.

Late in the fiscal year attention was given to planning a post-war research program for defense purposes. A committee composed of representatives of the War and Navy Departments, the National Academy of Sciences, the National Advisory Committee for Aeronautics, the Office of Scientific Research and Development, and the War Production Board was appointed, with Mr. Charles E. Wilson of WPB as chairman.

The first meeting of the committee was held 22 June 1944. At the start of this meeting, Mr. Wilson made the following public statement:

The Committee on Post-War Research was appointed by the Secretary of War, Henry L. Stimson, and the Secretary of the Navy, James Forrestal.

The purpose of the committee is to prepare a plan and organizational procedure which will insure the continued interest of civilian scientists after the war in scientific research for the Army and Navy. The Nation's scientists have been doing a splendid job since Pearl Harbor, and our task is to evolve a plan which will assure their continued interest in meeting the research needs of our armed forces after the war. In this way only can the United States keep ahead of all possible future aggressors in preparedness for national defense.

Ordnance Department

The most important new weapons developed and standardized by the Ordnance Department during the fiscal year were a varied assortment of launchers and rockets. A total of 18 separate rocket items were under procurement by the end of the year. In addition, the "bazooka" was supplied in quantity in a handy two-piece model, thus replacing the 50-inch tube which proved awkward and unwieldy in jungles. Originally the two-piece model was developed for paratroops, but its issue was generally extended. The European invasion troops were equipped with it.

Several new artillery pieces were standardized during the year, including a new 8-inch gun, a 120-mm. antiaircraft gun, a 90-mm. gun for tanks and self-propelled antitank vehicles. An outstanding achievement was the development of an "all-temperature recoil oil," suitable for use in all artillery used by ground troops. This functioned at temperatures from 40° below zero to the highest that were encountered in battle. The introduction of this multipurpose oil made unnecessary the former seasonal changes in recoil oils required to maintain artillery in good working order throughout the year.

The successful installation of 75-mm. cannons in airplanes was announced in December 1943. A lighter gun with equal fire power was developed and put into production during the year. This new gun was fabricated of high-strength alloy steels and contained a concentric recoil mechanism. Other items of aircraft armament put into production during the year were a new 20-mm. gun of high cyclic rate of fire and a new 37-mm. automatic gun.

Several improved types of ammunition and ammunition for a variety of different uses were placed in production. These included four new 20-mm. items, smoke shells for "spotting" purposes, ammunition for the 8-inch gun, various new shells and fuzes, mine firing devices, and a powder combination to reduce flash and possible flare-back in firing the 75-mm. aircraft gun. Three new fragmentation type bombs weighing respectively 4, 90, and 260 pounds were standardized. There were also notable developments in 1944 in small arms ammunition, machine gun accessories, body armor, rifle grenades, the .30-cal. carbine, and the carbine knife bayonet.

Forty-four new tank and motor transport items went into production, and most were delivered to troops by the end of the year. The most important development was an increase in the size and power of the guns mounted in the medium tank. This offset the German advantage from the 88-mm. gun used in tanks. The 105-mm. howitzer and the 90-mm. flat-trajectory gun were placed in the medium tank, as well as the 76-mm. high-velocity gun. A heavier medium assault tank with extra heavy armor was also put into production.



120-mm antiaircraft gun

The 81-mm. mortar and a twin 40-mm. antiaircraft gun were each mounted on a light tank chassis. A new full-track personnel or supply carrier for reconnaissance over snow, mud, or other treacherous terrain was available at the end of the year. Because of its ability to strike stealthily and swiftly, it was called the "Weasel." It climbed 45° inclines and could be turned in a 12-foot radius. Another reconnaissance vehicle was a six-wheeled, 8-ton armored car of low silhouette, roughly similar in appearance to a turtle's back. Other items included a snow tractor and trailer, tank recovery vehicles, a ¾-ton ambulance, 2- and 3-wheel motor scooters, and a 4,000-pound service truck. A "jeep" carrying an arc-welding outfit was also developed.

In spite of the fact that artillery of all calibers from 75 mm. through 240 mm. have been fired at a much higher daily rate than was expected, reports from overseas indicated that these Ordnance weapons performed exceptionally well under severe conditions. Most of the reports merely provided suggestions for improvements in weapons that were acknowledged to be sound in design and efficient in operation.

Signal Corps

Mastering the enemy in the electronics field has been no simple task. German technical development, in particular, was very rapid. Many new German weapons were encountered during the year, and the enemy was quick, too, in adopting Allied innovations and putting them to use against us.

The Germans completed during the year a most intricate system of warning and fire control networks along the English Channel. This equipment was highly effective, and compelled the United States and the United Kingdom to expedite the development of numerous deception devices in order to operate aircraft over enemy territory without excessive loss.

The radar preparation for the invasion of Europe was thorough and effective. The position of every German set which might give warning of the landings was located. Almost all of these stations were put out of action in the early stages of the operation. Diversionary raids with special equipment successfully drew the Luftwaffe away from the area being invaded by allied aircraft. Special navigating devices were used to identify the proper point for the main airplane forces to cross the French coast and for dropping or landing troops. The airborne units were landed with less than 2 percent losses.

Most of the outstanding developments in radar cannot be mentioned. Careful planning and constant effort were necessary in order to maintain the superiority of allied equipment and techniques. Our own efforts were intensified as the enemy's knowledge of radar techniques and their application increased.

In the Pacific the high humidity, considerable rainfall, and high temperatures caused signal equipment to deteriorate rapidly. Radio equipment particularly became inoperative because of dampness and fungus growth. To rectify this situation a study was made which resulted in the development of an impregnating liquid which upon application to radio and telephone equipment greatly increased its operating life.

At the request of the South Pacific theater a special signal unit was organized and provided with special radio equipment to establish 10 multi-channel radio links for short distances of not over 25 miles where it was impractical to install wire or cable systems. To meet the requirements, a new radio set was developed which in conjunction with telephone carrier equipment provided a maximum of 7 operating channels over a single radio circuit. Ten radio teams for the operation of these new sets were trained and shipped to the Southwest Pacific between December 1943 and April 1944.

In the fall of 1943 special equipment had to be provided for military operations to be undertaken in northern Burma. Some of the equipment which was not readily available was obtained through reverse lend-lease, by emergency procurement, and by taking over equipment intended for other operations. A direct circuit was provided from the China-Burma-India theater to Washington. Signal communications facilities, both wire and radio, were also provided for long-range bombing operations.

Particular efforts were made during the year to improve voice communication under difficult conditions such as high altitude, loud noise, and enemy interference. The Army Air Forces, on the basis of Signal Corps findings, established voice communication training units in all basic schools for air crews. A vocabulary of words suitable for use for tactical and training purposes with low power radio and telephone sets, or wherever voice communications against a background of noise was required was being printed as a technical bulletin at the end of the year. The basic compilation of the vocabulary was made by the Harvard University psycho-acoustic laboratory.

Although advances in electronics equipment and in remote radio control were the most spectacular developments of the year, the great bulk of the year's progress, from the new lip microphone to large multi-channel radio relay systems, was the result of ceaseless effort to meet the needs of ground troops and flyers in operations against the enemy. Some improvements came from the rapid exploitation of materials, such as magnesium, which became available for use in communications equipment; others resulted from techniques developed in the electronics field.

The construction of tactical open wire telephone circuits through jungles required the development of special equipment and procedures. The extensive use of "spiral-four" cable under all conceivable conditions—under water, underground, on the ground, above the ground, in the desert, in the jungle, for short spans and long spans—required that this cable be strengthened and refined to the utmost, despite the fact that it had to be manufactured without the use of rubber—the only ideal insulating and jacketing material.

Combat lessons required the development of new field wire-laying techniques. In tactical operations wire circuits had to be put in with the utmost speed, whether by the individual soldier on foot or from a moving vehicle. Experiments were made in laying wire from aircraft and from projectiles in flight. The resulting requirement for a fast-laying wire was met by the development of coils of field wire specially wound with a reverse twist so that the spool did not have to spin, thereby eliminating the use of reel equipment.

For front line communication new and better telephone and switching apparatus was developed. Sound power telephones were made available for use where batteries were unnecessary or undesirable. Combat in jungle and mountains required switchboards of lighter weight. A new six-line switchboard weighing only 12 pounds was developed.

A new model of the original "walkie-talkie," using miniature components and thus materially reducing the weight with no reduction in performance, was standardized during the year. At the other extreme of size, a company mobile radio station larger than any hitherto required was found to be needed in combat operations. It was designed and delivered on schedule, although the time was extremely short. Theater commanders demanded radio equipment to furnish continuous two-way multichannel radio, telephone and telegraph service comparable to that provided by higher facilities. One such system was standardized and put in production. Increased attention was given during the year by all manufacturers of radio equipment to suppressing radio interference noise.

A new radio set was standardized during the year as a portable radio set providing improved communications within an infantry division. A Signal Corps team was sent to the North African theater and completely reequipped one division with this set prior to the division's landing on the Anzio beachhead. The new set proved extremely valuable in use.

Other accomplishments included procurement of a number of systems for locating mortars and small arms. Advantage was also taken of the dependability of the new types of front line radio equipment by utilizing these radio sets in a radio relay system to connect sound ranging microphones to their associated recorders in field artillery sound ranging systems. This avoided the necessity of stringing wire over difficult terrain for artillery operations.

The signal equipment in closest contact with the individual soldier—microphones and head sets—was made more comfortable and effective in 1944. An entirely new carbon-type microphone was developed to replace the previous throat microphone which had low intelligibility. The new microphone was mounted over the upper lip by a simple harness in a position ideal for the transmission of speech. This microphone was designed to include noise-canceling features. It could be worn under gas masks or dust respirators, and permitted the free use of the individual's hands for other functions.

Many items of signal equipment had to be operated away from all normal power supply except batteries. The requirements for dry cells consequently exceeded manufacturing capacity, even though that capacity was greatly enlarged. A new dry cell of radically different construction and remarkably lengthened service life was developed and placed in production in 1944. Under tropical conditions one of the new batteries rendered service equal to that of five batteries of the previous type.

During the second half of the fiscal year 1943 reports came in from the European theater of the total loss of interphone communication by air crews on high altitude bombing missions. This condition

was serious, since combat aircraft crew members depended upon the interphone to warn each other of the imminence of air attack and to effect coordination between pilot and bombardier during the bombing run. Considerable investigation was required before the exact cause of the difficulty could be identified. The cause was finally determined, and a new high-powered interphone amplifier was developed and placed in production during the year.

Another problem encountered was interference in communications between airplanes, and from airplanes with their bases, caused intentionally or unintentionally by German electronics equipment. A special noise limiter was developed which not only abated such interference but eliminated many other noises picked up in aircraft radio sets.

Development was completed during the year and production begun on the first practical aircraft instrument approach system. This equipment permitted a pilot with the aid only of equipment installed in his plane to make a perfect blind approach and to let down on an airport runway. The reliability and usefulness of this equipment were established by trial installations at domestic Army airfields. Successful demonstrations of the installation were also conducted in the United Kingdom.

During the fiscal year 1944 the Signal Corps established three patent field offices in the United States and a Signal Corps Legal Agency in London, England. These patent offices reviewed all questions pertaining to patents and inventions arising out of Signal Corps development activities. They also assisted inventors in the preparation of patent applications on communications items. Through the establishment of these agencies the backlog of patent matters in the Office of the Chief Signal Officer was rapidly disposed of.

The functions of the Signal Corps Legal Agency in London were to provide a channel through which patent applications on classified military equipment might be forwarded for filing in Great Britain. This office also initiated and recorded requisitions for patent rights under the executive agreement on the interchange of patent rights and information. The British have shown every willingness to cooperate on letter licenses. Letters were sent from the agency looking to possible requisitions under the patent interchange agreement and were followed by personal interviews with the managers of British firms. Through arrangements made with the Ministry of Aircraft Production, the Signal Corps Legal Agency obtained data about nearly 100 items supplied by the British for possible production in the United States. These data were used for requisitions upon the British Government for patent licenses.

During the fiscal year 1944, 896 patent applications on Signal Corps equipment were tendered to the Government and were examined by the Office of the Chief Signal Officer. In addition, some 1,470 patent applications pending with the United States Patent Office were examined and it was recommended that 750 of these be placed under the secrecy provisions of Public Law 700 of the Seventy-seventh Congress. Over 250 inventions were submitted by Government employees. Thirty-six of these were approved for the filing of patent applications and 128 applications were filed in the patent office which were prepared by the patent agencies of the Signal Corps.

Quartermaster Corps

Research was continued throughout the year to find new and improved items and materials meeting the clothing, equipment, and ration needs of armies engaged in all climates.

In the field of clothing, special emphasis was placed upon mosquito-proof tropical garments, including the redesign of headnets to make use of open weaves, and impregnation with repellents to provide maximum protection against *Anopheles* and *Aedes* mosquitoes and biting flies. A suit for protection against body lice in typhus infected areas was developed and accepted by the Surgeon General and the United States Typhus Commission. A new field jacket of 9-ounce sateen, poplin-lined, with more pocket space and improved front and neck closure, was designed to replace the earlier field jacket and a number of special garments. A trench coat for officers, made of Byrd-cloth with a button-in wool liner was standardized. Officer's winter dress uniforms were restyled to provide a better fit, thus reducing the necessity for excessive alterations. This uniform also achieved more uniformity in officers' dress. Government patterns for the manufacture of the uniform were issued to contractors. A new wool field jacket was designed primarily for combat, but might also be used for dress. Initial procurement called for almost 4 million of them to be delivered with all possible speed. It had a collar which might be turned up tight around the neck and the cuffs might be adjusted tight around the wrists.

Plastic research included the development, in collaboration with the Naval Research Laboratory, of a plastic-glass cloth laminate with remarkable resistance to fragment penetration. Sample items made of this material included plane flooring, flak suits, flak curtains, and flak helmets for the Army and Navy Air Forces.

A program was begun to provide coated food cans to overseas theaters, especially the South and Southwest Pacific, to counteract rust and to reduce shine which attracted enemy snipers. These coatings included baked-on enamels applied by the can companies and dip coatings applied in the canneries. Paper labels were discontinued, since dampness destroyed them in the field. Instead, cans were identified by stamping, embossing, or lithographing.

A number of developments were undertaken to provide better waterproof protection for the soldier and his equipment. The need for a poncho-type garment in Pacific areas resulted in the adoption of a light-weight coated-nylon item. This could also be used as a shelter tent, ground sheet, cover for sleeping bags, and a bag roll. Research was continued on coated fabrics to improve tear strength and abrasion resistance. Extensive use of plastic film was initiated, beginning with the adoption of waterproof covers for small arms. Production of this film progressed from that involving manufacture on a very small scale by two companies to large-scale production involving 10 manufacturers. Film of various types, including synthetic rubber, was under consideration at the end of the year for raincoats, ponchos, map cases, sleeping bag liners and cases, special waterproof socks, and waterproof and moisture-vaporproof packaging.

In the field of cooking and heating, a small 1-burner stove was developed, made completely of noncorrosive metals with valves suit-

able for leaded fuel. A small-detachment cooking outfit with gravity feed burner was also developed of noncorrosive metals, weighing approximately 80 pounds, suitable for 2 packboard loads, and having cooking capacity for 30 men. The gravity feed burner weighed 3 pounds as opposed to the field range fire unit weighing 50 pounds. Field range fire units and lanterns were converted to burn leaded fuel. The life of the fire unit filter was increased from 2 to 3 hours up to 300 hours. The lantern would burn leaded fuel for 150 hours as opposed to 5 hours of unsatisfactory service formerly.

Mess gear and cooking utensils were being made of stainless steel and aluminum at the end of the year. Two field refrigerators were developed—both portable, skid-mounted and self-powered—for frozen food transportation. One had 26½-cubic foot capacity and the other 125-cubic foot. A portable fumigation chamber for field use was developed which could be set up and put in operation in 20 minutes. A combination intrenching shovel, adjustable for use as a pick or hoe, was designed to replace the older intrenching shovel. A special wire cutter, suitable for cutting the heaviest, hardest steel German wire, was designed, produced, and shipped abroad in 1 month.

Two types of solid fuel for use in heating rations under combat conditions were developed. An improved tablet for the sterilization of water in canteens was found and put in production. Cosmetics for camouflage were standardized in nine colors. Soldiers in desert areas, as well as in extremely cold climates, were supplied with chap sticks. Other important aids for the soldier were insect repellents and a cream to prevent sunburn which also permitted the skin to tan.

With the standardization of the new combat service boot, the Army was provided with a comfortable, durable, and long-wearing boot which eliminated the necessity for leggings. Improvements included the use of aluminum eyelets, brass reinforcing nails, and nylon laces.

The study of rations under actual conditions of use resulted in many important developments and new fundamental concepts. Physiological studies developed the fact that personnel operating under conditions of reduced oxygen intake (high-altitude fliers, for example), did their work more efficiently if provided with high-carbohydrate diets. Accordingly, rations were developed for this purpose. They had to be packed so that they could be opened by men wearing heavy gloves and oxygen masks in extreme cold. Other studies indicated that where water is limited, high-carbohydrate diets could be most efficiently used by the human body. Accordingly, in many rations the proportion of carbohydrates was enlarged. The remaining essential elements of a normal diet could be supplied after the emergency, or the operation, was concluded. Numerous other improvements were made in both the C and K rations to provide more palatable food and greater variety. As a result, these rations could be used for a considerable period of time, whereas before they were intended for only short use.

Elaborate calculations went into the development of the 10-in-1 ration. In effect, this ration was a prepackaged version of the Field Ration B, except that it incorporated many changes making it more flexible. Rations for 10 men for 1 day were packaged in a single

weatherproof container in such manner that it could be split, if desired, into two 5-man rations. The noon meal component, which was normally eaten in the daylight, was an individual issue so that the grouping of even 5 men for messing was not necessary. Inversely, the 10-in-1 ration was so adjustable that it could be used in organized messes of up to several hundred men where field kitchen equipment was employed. For purposes of requisitioning, the figure of 10 rations per case simplified calculations. The case and contents weighing 48 pounds could easily be carried on a man's back, and the case was so designed that it exactly fitted the standard packboard. The individual food items were nonperishable, and while designed primarily to be eaten heated, they were also palatable when unheated. Five distinct varieties of this ration were provided, and the outside container was marked accordingly, thus permitting 15 consecutive meals, each one different. Each case for the day also contained a supply of cigarettes, matches, water purification tablets, salt, can opener, toilet tissue, toilet soap, and paper towels.

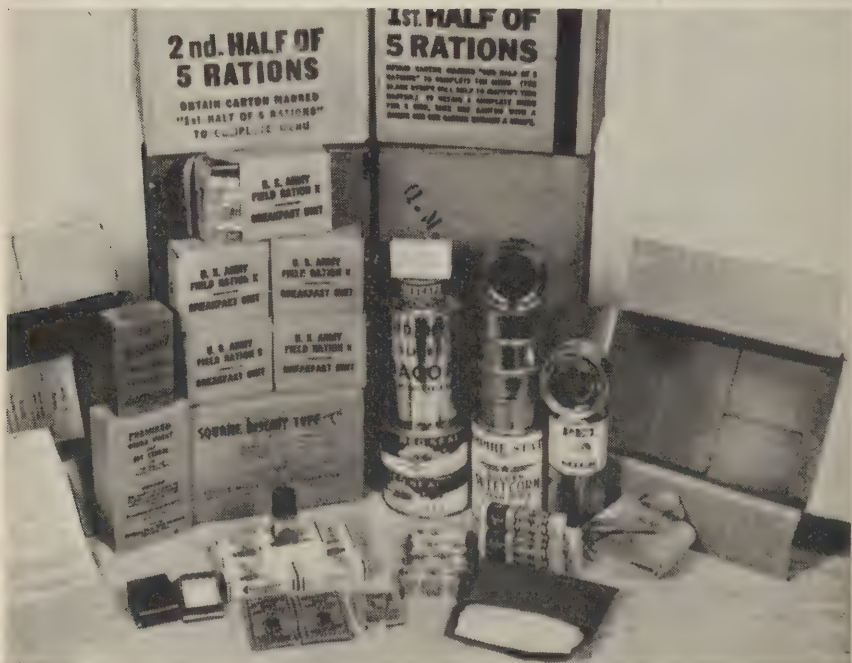
With the light metals increasingly available during the year, an attempt was made to decrease further the weight of all items of equipment. To make the soldier's life less difficult under adverse conditions of combat and in remote areas the following items were also adopted: all purpose soap suitable for shaving, laundry, and toilet use, which would function in all temperatures of hard, soft, or salt water; water-resistant matches which would light under humid conditions; and fuel tablets for use in heating food and drink where cooked rations were not available. Finally, covers and bags to protect equipment from water during amphibious operations were provided, including waterproof covers specially constructed for radio receiver and transmitter sets which permitted operation of equipment while enclosed in the container.

Corps of Engineers

Recent trends in offensive warfare concentrated development in 1944 upon prefabricated bridges, mine-clearing devices, rapid repair of facilities, mountain warfare equipment, camouflage, and prefabricated buildings. Emphasis was laid on doing everything in a hurry.

The destruction by the enemy of bridges in the territories he evacuated and the ever-increasing size and weight of weapons of war created complex bridge problems. To meet the demands of heavier tanks, heavier trucks and heavier trailer loads, the steel treadway bridge was completely redesigned to increase its capacity from 27 to 40 tons. In order to provide bridges of a more permanent nature for destroyed spans, new designs and working drawings were prepared for single-lane and double-lane highway bridges with clear spans of 20, 30, 40, 50, and 58 feet, utilizing structural steel and timber available in the Engineer supply program.

The extensive and ingenious use by the enemy of various types of antipersonnel mines and booby traps increased the problem of developing suitable mine detectors and clearing devices. Moreover, the ability of the enemy to devise new types of mines necessitated continued attention to all possible countermeasures. A mine field clearing snake was developed and successfully used. A vehicular mounted



10-in-1 ration.

detector set was developed to satisfy the need for a very mobile type detector to locate mines used by the enemy on roads and road shoulders.

The increased use by the enemy of nonmetallic mines demanded a satisfactory device for detecting them. The two detectors first developed proved impractical, but another detector using a different principle was developed and quantity procurement initiated.

Reports from theaters that Engineer troops were making some of their construction equipment serve as assault weapons prompted the development of several special service vehicles. A bulldozer mounted on a tank was one of the most spectacular accomplishments of the year. It consisted of a bulldozer blade provided with the necessary accessories to mount it on all medium tanks. The work of the bulldozer could thus be performed under fire. This tank-bulldozer was used in Normandy.

Demolition often had to be performed under battle conditions. To move demolition parties to the scene of action, the engineer armored vehicle was developed. Since tractors and graders had to be used on beaches and in jungles where their occupants were exposed to enemy fire, armored cabs were provided. A medium tractor was adapted for use in beach operations by the addition of a nonrevolving, rear-mounted winch and an armored cab to provide protection to the operator. Other vehicles developed were a low-bed, 20-ton semitrailer with low-pressure tires for use on soft terrain and a tandem 4-wheel trailer for heavy loads.

In mountainous areas where even pack-animal routes were difficult or impossible to traverse, the need for light aerial tramways and cableways resulted in the production of three types of tramways. For the passage of foot troops and pack animals with light equipment, portable suspension bridges were provided. These utilized timber obtained at the site for flooring and for stiffening trusses in order to reduce to the minimum the amount of parts sent overseas. To enable mountain troops to negotiate difficult terrain on foot, the fixed Alpine path was developed; it includes fixed cable handrails, ladders, and suspended walkways. Skylines were provided for the evacuation of wounded troops.

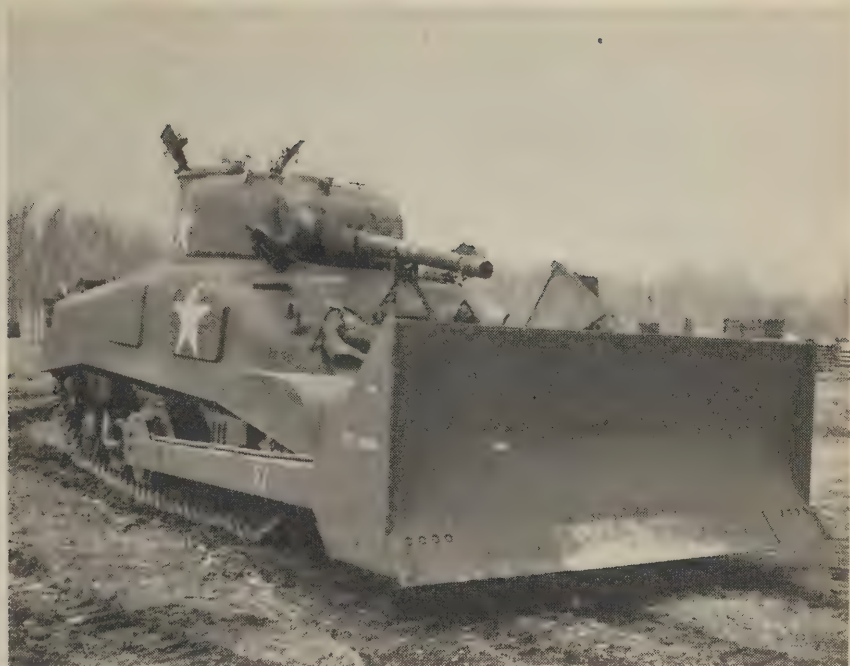
During the fiscal year the portable landing mat was constructed of aluminum instead of steel. Although bulkier, this mat was much lighter. A new interlocking device was developed which was both simple and economical in the use of metal. Rehabilitation machines to repair damaged mats were produced and sent to all theaters.

New methods of concealment for the individual and his housing were found, and special camouflage techniques for snow terrain were worked out for men, vehicles, and field fortifications. Semipermanent camouflaged covers were developed for medium bombers. Rot-proofing compounds were produced for use on textiles. The rot-proofing of 500 million burlap sandbags was begun.

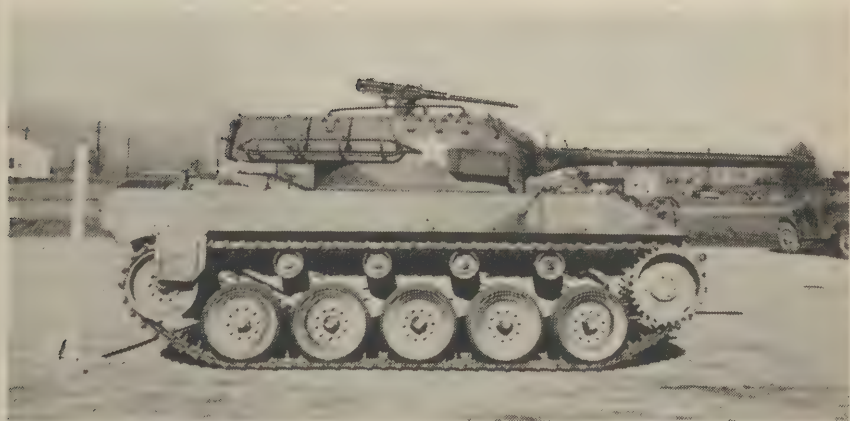
The rapid handling of gasoline presented many problems during the war. The use of gas lines from the beach to the interior proved the solution. During the past year a portable pumping station was developed for the necessary boosting. An aluminum storage tank was also designed. The constant trouble from water suspended in gasoline was overcome with the development of a new gasoline-water separator which delivered gasoline containing less than 0.02 percent water.



Steel Treadway Bridge, M-2: photo shows bridge being crossed by M10 and M4 tanks.



**Engineer Tank Destroyer.
Tank Dozer.**



M18 Tank Destroyer.

Foundry-shop equipment of light weight was developed for maintenance activities. This unit did not produce any noise or flames that would alert the enemy, and it was capable of processing aluminum and bronze as well as steel and iron.

An adequate supply of portable water had to be available in the field. New equipment was developed to analyze water, and to detect and treat toxic agents used by the enemy in contaminating water supplies. Air-borne well-drilling equipment for rapid drilling was provided. New devices were found for the purification of water—filtration when necessary and chlorination at all times, and new types of pumping and storage equipment were developed. A highly efficient portable distillation unit for transforming sea water into drinking water was developed and placed in use. It had a capacity up to 3,000 gallons a day.

Drawings for hospitalization, housing, and storage facilities in theaters of operation were revised in their entirety to provide for more simple construction. Furthermore, new types of prefabricated buildings using wood or steel were developed for overseas use. These replaced previous buildings which were unsatisfactory under some climatic conditions, unsuited for functional use, or required excessive cubage or weight in shipping. Separate panel sections permitted adjustment in the length of the individual buildings to meet any requirements.

An outstanding device for training machine gunners on bomber crews was developed during the year for the Army Air Forces. This was designated the Poorman Flexible Gunnery Training Range. It required student gunners to think and act under conditions obtaining in combat. The apparent speed of the target was attained by placing the turret upon a rotating base, from which the gunner fired at a stationary target. Use of this feature reduced by 50 percent the range area previously required, resulting in savings to date of more than 100,000 acres. The Poorman Range under the current construction program was installed at 43 Air Force stations and at 7 Air Force schools.

Altogether 102 items of engineer equipment were adopted and standardized during the year. Plans for production were immediately effected.

Chemical Warfare Service

To meet greatly increased demands for specific types of chemical warfare supplies in theaters of operations, the Chemical Warfare Service during the fiscal year 1944 completed important developments on all its major weapons and munitions, and on protective equipment. A total of 82 new chemical warfare items were standardized during the year. Among the most important technical achievements were those that enhanced the operating efficiency of incendiaries, the 4.2-inch chemical mortar, and smoke munitions.

Several new incendiary clusters and oil bombs went into production. These oil bombs were designed to supplement magnesium bombs by their capacity to spread fire over wider areas. The development of a cluster of 4-pound magnesium incendiaries arose from a request by

the Army Air Forces for incendiary bombs that would permit precision rather than area bombing. The new cluster, by remaining intact until close to the target, not only permitted greater accuracy, but reduced the danger of cluster parts striking following aircraft. A high-explosive element was added to a certain percentage of the bombs in each cluster. After considerable difficulty, satisfactory aimable clusters were devised for new types of oil ejection bombs.

In response to the Eighth Air Forces' requirements for a large oil bomb to penetrate the roofs of industrial targets in Germany, the Chemical Warfare Service in the first half of the fiscal year designed and standardized the 500-pound oil bomb. Previously, the largest incendiary had been the 100-pound bomb, also standardized during the fiscal year. As a filling for the modified 500-pound general purpose bomb, the Chemical Warfare Service also evolved two new incendiary mixtures.

Among smaller bombs, a 10-pound incendiary was perfected and its large-scale production planned. This new light bomb proved highly effective against targets in the Pacific, and could be used with different types of fillings. The same casing was used for an improved smoke bomb provided for use in airborne landings.

The basic ground weapon of the Chemical Warfare Service, the 4.2-inch mortar, was strengthened during the year and its ammunition improved. A new propellant was developed to extend the range of the weapon to 4,400 yards without increasing the risk of damage to its parts. To enable the mortar to carry out special missions, such as digging craters, eliminating barbed wire, and destroying field fortifications, new fuzes were developed for the shell. A new type of firing cartridge, superior to its prototype in its resistance to tropical climates, was perfected, and a new individual waterproof container for the shell itself was produced. Greater firing accuracy and speed in laying the weapon was achieved through the adoption of an improved mortar sight, and methods were devised for delivering flat trajectory fire at point-blank range.

Of particular importance to troops in the Pacific theaters was the development during the fiscal year of a new portable flame thrower, capable of greatly increased range and utilizing an improved thickened fuel. A more positive type of ignition was designed to increase operational efficiency in moist tropical regions and the weapon itself was thoroughly waterproofed. Changes in its mounting made it easier to carry and to operate. Immediately following the successful production of the new flame thrower, a modified version was developed for tanks. Several hundred such units were produced and dispatched overseas.

Combat operations during the fiscal year revealed the necessity for specialized, weatherproof smoke pots which would be considerably larger than existing land smoke pots and capable of being wired in long lines for ignition. To meet these field requirements the Chemical Warfare Service developed and standardized a new smoke pot, weighing about 30 pounds, capable of burning for 15 minutes, and producing a volume of smoke equal to that produced by three of the former pots. The floating type of smoke pot, important in amphibious operations, was also perfected so that it could withstand rough handling and

would not be susceptible to spontaneous combustion. Improved colored smoke grenades, filling an important need for identification and marking, were standardized and manufactured in four colors.

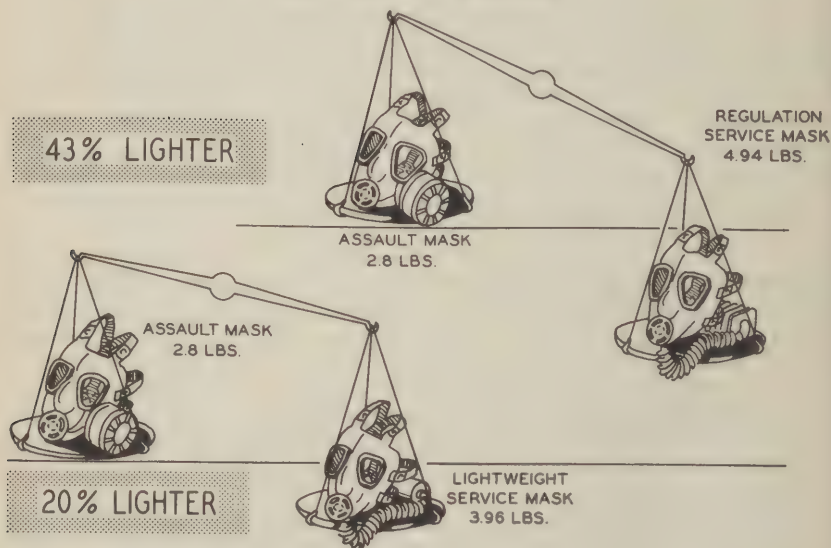
The effectiveness of mechanical smoke generators was definitely established in the protection of such rear area installations as the harbor and dock facilities of Algiers and Naples. It was demonstrated at Palermo, for example, that a vital harbor area could be completely obscured from aerial observation in 15 minutes by chemical warfare troops using motorized mechanical smoke generators.

Oversea commanders early in the fiscal year expressed a need for large area smoke screens in combat zones, where the motorized generator was too bulky for effective use. To furnish frontline troops with a portable smoke generator capable of producing thick smoke screens for extended periods of time, the Chemical Warfare Service designed and standardized a smoke generator weighing only 250 pounds and readily portable by two men. The new smoke generator was built to operate from a foxhole, a jeep, or small landing craft. It gave smoke generator companies almost double their previous screening capacity.

CHART 16

ASSAULT MASK

COMPARATIVE WEIGHTS



Research in chemical agents resulted in the development of two new war gases, the standardization of another, and the modification of a fourth to render it suitable for a more effective dissemination. Gas continued to be available in case the enemy should decide to employ this weapon against our forces. The United States was well prepared for gas warfare under any climatic conditions.

A major accomplishment in providing protective equipment was the combat mask, standardized with a waterproof carrier. It was developed in response to field demands for a mask that would be extremely light and compact, and yet capable of providing excellent protection against all known war gases and toxic smokes. The combat mask was only one-half the weight of the ordinary service mask, and both lighter and smaller than the lightweight service mask. Increased visibility when the mask was worn permitted a man to crawl with his face close to the ground. The waterproof carrier not only increased protective efficiency, but also afforded sufficient buoyancy to serve as a partial life preserver.

Another advance in protection against war gases was the development and standardization of a new protective ointment, nonirritating and capable of adhering to the skin much longer than the product previously used. Tests demonstrated it to be a good decontaminant for liquid vesicants as well as a protecting ointment effective against very high concentrations of vesicant vapor and to some degree even against liquid agents. Pigments were incorporated into the new ointment so that its camouflage characteristics were excellent.

During the year processing facilities to render clothing protective against vesicant agents were developed. Two types of impregnation plants were standardized, and procurement of over 100 plants was completed.

Most of the improvements made on the chemical mortar, flame thrower, incendiary bombs, and smoke munitions during the year were in answer to special needs reported by oversea observers. Tinted lenses for protective eye shields, for example, were developed after field reports revealed that the eye shields were being widely used as sun glasses in theaters of operations.

Medical Corps

Outstanding medical items developed during the year included mobile optical repair, and mobile dental and medical laboratory units. Improvements were made in hospital trains; a self-sufficient hospital car was introduced. A sterile petrolatum field dressing was adopted as standard. On 1 July 1943, 59 Medical Department research and development projects were active; 61 new projects were initiated during the year; 52 projects remained active at the end of the fiscal year.

Two major changes occurred in Medical Department research facilities. The laboratory at Edgewood Arsenal was transferred to the Chemical Warfare Service on 1 July 1943. However, it continued to cooperate with the Medical Department in the development of preventive and therapeutic measures for casualties of chemical warfare. On the other hand, the Armored Medical Research Laboratory, Fort Knox, was transferred from the Army Ground Forces to the Medical Department. This laboratory specialized in research of medical problems arising from armored warfare.

Research was continued at the Army Medical Center, the Army School of Roentgenology, and the Veterinary Research Laboratory. The Medical Department Equipment Laboratory at Carlisle Barracks continued to test and develop individual and field equipment.

Forty-five new Medical Department items were developed and 83 commercial ones were standardized. Improvements recommended by operating units were effected in 51 items. All these items were tested in specialized Army medical installations or by other Government agencies.

Transportation Corps

Equipment of the Transportation Corps was almost entirely standard railroad or marine items. To some extent modifications in design were necessary to achieve desired military characteristics. On the other hand, no extensive research program was necessary in order to provide greatly improved equipment. The technical staff in the Transportation Corps supervised design studies, assisted in standardizing joint Army and Navy specifications on marine equipment, and made sure that limitations on raw materials were incorporated into specifications.

During the fiscal year 1944 the Transportation Corps was assigned 450 jobs for the conversion or revision of existing marine designs. For example, the limited marine repair facilities in the Southwest Pacific and the great distances between ports created a need for "marine repair ships" for service in that theater. A program for the conversion of six small freighters into such repair ships was initiated in the second half of the fiscal year. By the end of the year two had been placed in service and the others were to follow shortly afterwards. Operation of these facilities was turned over to the Coast Guard but the Transportation Corps supervised the alterations and provided the repair crews.

Another conversion job was developed to provide repair ships. All important harbors seized from the enemy were in a state of complete demolition. This situation was expected to continue throughout the assault upon the European continent. In order to restore harbors to operation as rapidly as possible the European Theater of Operations requested specially equipped "port repair ships." A program was begun to convert 10 freighters into such vessels, of which 3 were delivered before the end of the fiscal year. These vessels were manned and operated by the Corps of Engineers. The Army Air Forces requested six "aircraft repair ships" to be used in rehabilitating damaged airplanes in advanced areas of the Pacific. Liberty ships were converted for this purpose. Transportation Corps provided the crews and the Army Air Forces the aircraft technicians.

During the year standard contract plans and specifications were prepared for 23 designs and incorporated in the 1944 procurement program. These designs were basic and covered over 90 percent of all marine equipment procured. The remaining active designs were for special purpose vessels or changes in standard designs necessitated by production, maintenance, or other considerations. In August 1943 an officer of the Ordnance Department was assigned to the Transportation Corps to assist in standardizing the types of armament to be placed on vessels. This officer reviewed placement plans and specifications for stowage on vessels of ammunition and spare gun parts.

Conclusion

Many research projects undertaken during the fiscal year 1944 were continued into the new year. As far as possible, special requirements that might arise in military operations were anticipated. The research facilities of American universities, industrial establishments, and other agencies were extensively used. When an item was standardized for issue and procurement, every assistance was provided industry in getting production underway.

The effort to find new and improved weapons was not relaxed at any time. To halt would mean to drop behind the enemy.

Chapter 7. REQUIREMENTS

The Army Supply Program continued throughout the fiscal year 1944 to be the comprehensive plan for ASF procurement. The quantities set forth in this program were the officially authorized amounts for purchase by the seven technical services. Section I of the Army Supply Program showed the requirements for ground equipment for 2 years in advance for the Army, the Navy, and International Aid. Section II set forth requirements for equipment and supplies peculiar to the Air Forces. Included here were items of exclusive interest to the Air Forces purchased by the Ordnance Department, the Signal Corps, and Chemical Warfare Service. Section III showed required production for ground equipment and supplies to be provided our allies for which there was no counterpart in the supply program of the American Army. Section IV set forth the construction program. A new Section VI on civilian supplies for occupied areas was published in December 1943.

Procurement requirements were established on a calendar year basis. The 1944 program as set forth in the regular semiannual revision of the Army Supply Program on 1 August 1943 presented requirements totaling 26.2 billion dollars. Interim revisions were made from time to time in this program. During the fiscal year 1944 these were brought together and published on a monthly basis, including the monthly estimates of total changes in dollar value. A complete recomputation of the Army Supply Program on 1 February 1944 established the 1944 procurement program at 22.3 billion dollars. The decrease in requirements resulted almost entirely from changes in the projected size of the Army from 8.3 million men to 7.7 million men. At the same time the program for the full equipment of certain divisions was lengthened and strategic reserve requirements established by the War Department were lowered.

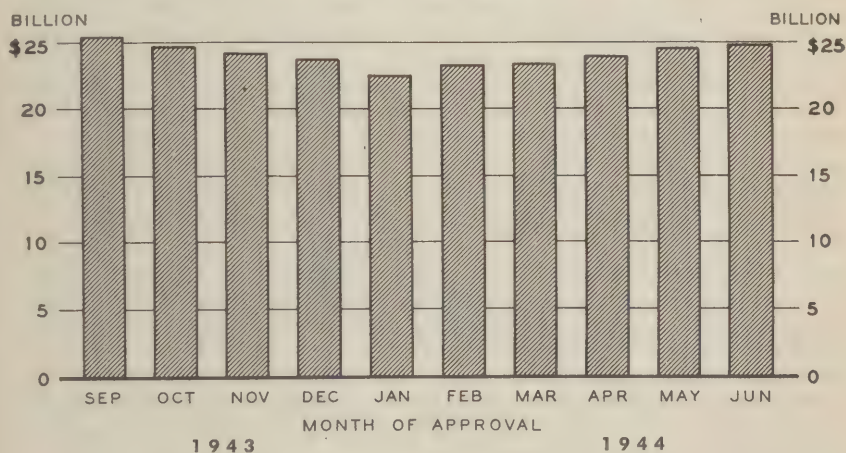
For the most part the reductions in stated requirements affected Ordnance procurement more than that for any other technical service. Since Ordnance items were usually the more costly individual pieces of equipment, the reduction in the over-all program showed sizable decreases.

The major reductions occurred in small arms and small arms ammunition, mines and bombs, light field artillery and ammunition, self-propelled weapons, miscellaneous combat vehicles, and in lighter trucks. Requirements for small arms ammunition for the Navy, for International Aid, and for the Army Air Forces were reduced. In addition, the day of supply of ammunition for the cal. .30 rifle, the cal. .30 machine gun, and the cal. .45 submachine guns were revised downward in the light of combat experience. Operations in the North African theater and elsewhere indicated that the actual expenditure of small arms ammunition was at a lower rate than had

been anticipated. This resulted in accumulation of stocks in the United States. With these stocks credited against future requirements, necessary production in 1944 could be further curtailed. The number of self-propelled weapons was decreased because of the elimination of certain troop units from the troop basis, particularly tank destroyer battalions. The reduction in light trucks reflected a general shift in the troop basis away from armored divisions and other tactical units requiring a large number of wheeled vehicles.

On the other hand, there were sizable increases in nonordnance phases of the 1944 program. Requirements for all kinds of communications equipment were increased. For instance, original calculations for ground radio equipment were based upon the needs of tactical units but had not provided sufficient equipment for communications facilities between headquarters of theaters and subordinate commands. The popularity of the 4.2-inch chemical mortar resulted in revisions of tables of equipment providing this weapon for many more units. The development of such a drug as penicillin expanded sizeably Medical Department procurement of drugs, chemicals, and biologicals.

CHART 17 CHANGING PRODUCTION REQUIREMENTS FOR CALENDAR YEAR 1944



The Army Supply Program as prepared on 1 February 1944 was not static. Changes were made continually in the light of new experience. From the first of February until the end of the fiscal year 1944 had the net effect of increasing the program. The low point in calculated requirements was 1 February 1944. The continued upward trend is shown in the accompanying chart. By the end of the fiscal year 1944 required production was estimated at 24.8 billion dollars, only slightly below the requirements contained in the August 1943 revision. Needs for antiaircraft artillery were reduced because of the growing air superiority of the United Nations. A number of

antiaircraft units in the troop basis were planned for conversion into artillery units. Such a change necessarily had its repercussions upon requirements in the Army Supply Program. Antiaircraft artillery and ammunition were reduced while procurement of heavy artillery was stepped up.

Changing Requirements

The problem of changing requirements for Army equipment and supplies was well illustrated by the demand for heavy artillery and heavy artillery ammunition. The number of heavy artillery battalions (155 mm. howitzer and above) scheduled for activation by the Ground Forces was reduced drastically when the Army supply program was revised in November 1942 and February 1943. Two factors brought about this reduction. In the first place, tactical plans for mobile warfare suggested that the number of heavy artillery battalions was unnecessarily large. Also, there was much doubt about the ability to move heavy artillery equipment through the jungles of the Pacific islands. In the second place, limitations of raw materials indicated, in view of our attitude toward the use of these weapons, that preference should be given to other needs for steel.

Early in 1944 it became evident that production of heavy artillery and heavy artillery ammunition would have to be increased to meet new military requirements. Effective use of the 155 mm. gun during the North African campaign had increased the demand for this weapon. In addition experience on the Italian front during the winter of 1943 and 1944 resulted in larger expenditures of heavy artillery ammunition than had been anticipated. For instance, in the last half of February 1944, and again in the last half of March, the average number of rounds of 155 mm. ammunition fired on the Italian front was twice the projected average rate of fire used in computation of ammunition requirements. For the month of January and for the last half of March the ammunition expended in the daily average fire from the 4.5-inch gun was twice the expected rate of fire. The same was true for the 8-inch howitzer in the first half of February and in the first half of March. Such large rates of expenditure in Italy meant not only an increase in ammunition needs but also an increase in the need for gun barrels. The barrel of an artillery piece is effective only for a limited number of rounds. It must then be replaced.

Experience at Kwajalein in the Pacific likewise showed the need for heavy artillery pieces. Moreover, lend-lease requirements for heavy artillery had never been satisfied.

With the increased demands for heavy artillery and heavy artillery ammunition the supply in the United States was rapidly depleted. The 155-mm. gun and howitzer, the 240-mm. howitzer, and the 8-inch howitzer were issued to American troops as fast as they were made available from production. Only 25 to 50 percent of the authorized allotments of the 155-mm. gun and the 8-inch howitzer were available for training new troop units. By June 1944 the overseas supply of spare tubes was less than 40 percent of the number authorized for both the 155-mm. howitzer and the 240-mm. howitzer. For other heavy artillery items the actual supply of spare tubes was about 25 percent of necessary requirements.

In February 1944, the Army Service Forces began maximum production of spare tubes for the 155-mm. gun and the 8-inch howitzer. This was extended to other heavy artillery pieces in March. An increase in the number of weapons to be produced in 1944 and 1945 was directed by the War Department in March and May 1944. This meant also an increase in the production of ammunition, with appropriate production of spare tubes. The total number of heavy artillery battalions for the Army was increased 25 percent between February and May 1944. For certain of the heavier artillery battalions the increase was more than 100 percent.

The required production of ammunition was increased several times. For the 155-mm. gun monthly required production was fixed at 3 times the deliveries obtained in March 1944. For the 155-mm. howitzer the production requirements of ammunition became 7 times March deliveries. For the 4.5-inch gun, the increase was 13 times above March deliveries. For the 8-inch howitzer the increase was 15 times. For tubes, the monthly required production for the 155-mm. howitzer became 50 percent greater than March deliveries. For the 155-mm. gun, required tube production was fixed at 3 times March deliveries. For the 4.5-inch howitzer, required production was jumped 500 percent and for the 8-inch gun, 700 percent.

Trends in Requirements

A comparison of deliveries in 1943 with 1944 and 1945 procurement requirements revealed important trends in wartime procurement. The accompanying table shows the procurement program as of June 1944. As of that time 1944 requirements for Ordnance matériel were substantially below 1943 deliveries. This downward trend was not true, however, for trucks, for artillery and mortar ammunition, or for Signal Corps equipment, Chemical Warfare equipment, Quartermaster supplies, and Transportation supplies. These changes reflected in large degree the status of the war effort. Initial equipment had been largely realized, while requirements for expendable or consumable supplies such as artillery ammunition, incendiary bombs, and food were increasing. In addition, requirements in communications equipment, construction equipment, and transportation equipment were increasing. These increases likewise reflected active military operations against the enemy. As American forces brought more territory under their control communications needs expanded. The construction of new airfields, the reconstruction of harbors and roadways, the building of forward bases and supply facilities, all required more construction equipment. The movement of supplies demanded additional transportation equipment, particularly heavy trucks.

Plans as of 30 June 1944 for procurement in the calendar year 1945, based on a two-enemy war, called for deliveries totaling 22.6 billion dollars, some 2.2 billion dollars below 1944 requirements. The 1945 procurement program by technical services, expressed in terms of percent of the 1944 program, is shown in chart 20. Only Medical Department procurement was expected to be larger in 1945 than in 1944. On the other hand, deliveries to the Transportation Corps would be less than half the 1944 requirements.

Required production for calendar years 1943, 1944, and 1945

[Thousands of dollars]

Service and major group	As of 30 June 1944		
	1943 ¹	1944	1945 ²
Total (including subsistence)	\$22,795,046	\$24,804,027	\$22,558,408
Ordnance Department	12,588,013	11,467,148	11,413,137
Small arms matériel	951,601	803,339	636,378
Small arms ammunition	1,521,828	628,473	652,485
Artillery ammunition (other than heavy field and rockets)	1,570,716	2,283,530	2,561,021
Heavy field artillery ammunition	186,940	407,186	963,444
Mines, grenades, bombs, and pyrotechnics	885,934	1,305,539	1,594,943
Heavy field artillery	89,907	172,308	178,277
Artillery other than heavy field	1,354,916	809,184	557,798
Tanks	1,886,288	1,378,968	1,772,980
Self-propelled weapons	931,846	432,696	332,316
Miscellaneous combat vehicles	672,805	399,009	310,392
Light trucks	826,809	720,066	644,810
Medium trucks	833,790	997,004	686,282
Heavy trucks	462,203	653,916	302,159
Other vehicles and miscellaneous	412,430	475,930	219,352
Signal Corps	2,627,620	3,188,404	2,723,498
Aircraft equipment	719,062	540,985	575,951
Airborne radar	198,572	582,628	678,613
Ground radar	352,183	279,172	199,659
Special ground radio	90,277	104,866	18,129
Ground and vehicular equipment	651,110	764,847	434,270
Wire communication and miscellaneous	616,416	915,906	816,876
Corps of Engineers	1,474,501	1,938,391	1,684,578
Antiaircraft	161,738	15,291	7,030
Boats and bridging equipment	87,752	124,818	79,733
Construction equipment	395,461	690,352	702,226
General equipment	635,177	818,680	580,072
Tractors, crawler type	194,373	289,250	315,517
Chemical Warfare Service	520,877	890,499	613,616
Ammunition	68,602	204,166	125,807
Bombs	173,745	459,336	341,792
Chemical agents	46,695	8,597	8,322
Protective matériel	144,719	89,933	89,515
Service equipment	32,516	14,405	2,785
Weapons	7,501	17,433	8,506
Miscellaneous	47,099	96,629	36,589
Medical Department	387,920	239,837	265,374
Drugs, chemicals, biologicals	118,641	128,904	173,316
Other medical supplies and equipment	269,279	110,933	92,058
Quartermaster Corps	4,643,088	5,960,287	5,302,566
Clothing	1,409,953	1,152,927	1,280,887
Equipment	657,809	674,831	651,172
General supplies	569,862	678,451	637,878
Subsistence	2,005,464	3,454,078	2,732,629
Transportation Corps	553,027	1,119,461	555,639
Self-propelled vessels	156,951	420,419	74,622
Nonpropelled vessels	68,566	86,580	60,455
Cranes and derricks	6,527	25,107	14,556
Railway cars	84,341	91,702	72,013
Locomotives and locomotive cranes	116,106	243,257	129,340
Miscellaneous rail	29,518	51,430	38,154
Miscellaneous marine	91,018	200,966	166,499

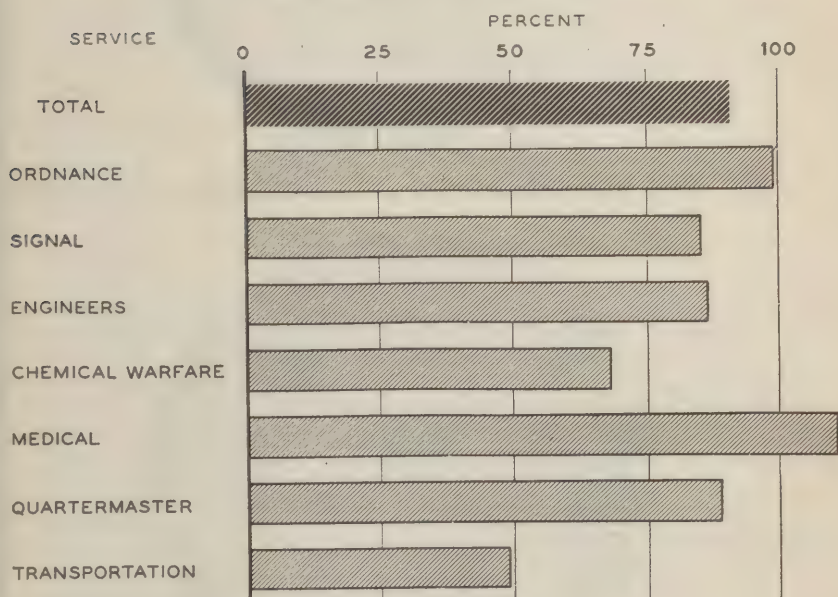
¹ Represents actual deliveries.

² Based on two-enemy war.

Of the 1944 program as a whole only 2 percent of requirements was necessary to complete initial issue of weapons to the American Army. Twenty-five percent of the total program was general replacement of equipment worn out or lost in combat; 17 percent was for international aid; 14 percent for Army Air Forces; and 12 percent was food. The miscellaneous items amounting to 14 percent of the total program ranged all the way from soap, brooms, and mops to locomotives, railway cars, and all types of construction equipment. In other words, by 1944 Army procurement requirements were operating requirements. The anticipated use of procurement needs in 1945, should the war in Europe continue, are likewise shown on the opposite page.

CHART 18

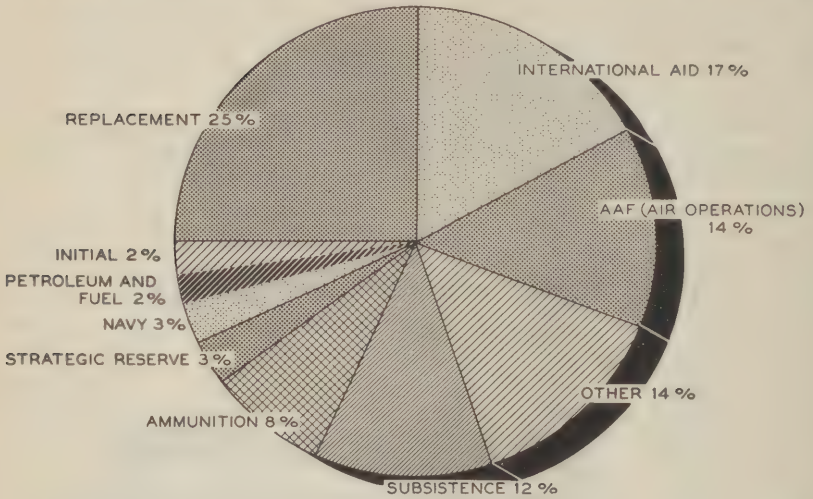
**1945 PROCUREMENT PROGRAMS
AS PERCENT OF 1944**



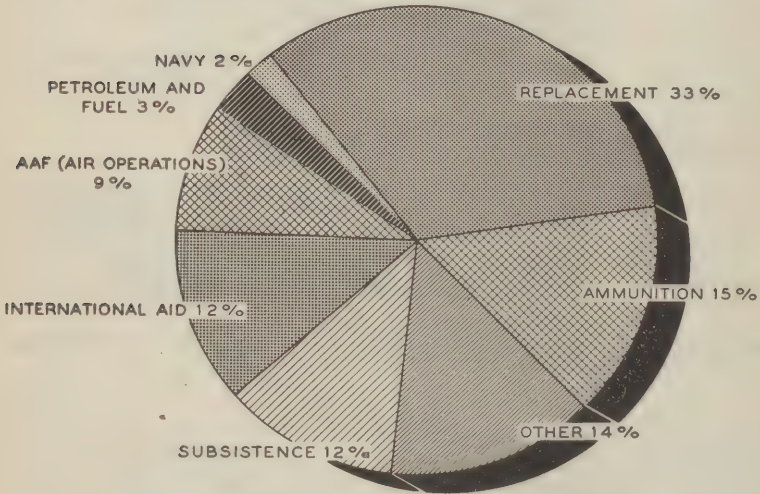
In preparing the Army Supply Program for 1 February 1944 a new feature was introduced. In reviewing requirements as calculated by the technical services, ASF headquarters in some instances made a straight reduction in the program because it was felt that stated requirements were too large. These limitations were designated by the letter "L" and resulted in establishment of a figure substantially less than the total computed requirements. In the February Army Supply Program 155 different items were thus reduced; 58 of these were in the Signal Corps, 71 in the Medical Department, and 18 in the Ordnance Department. The total requirements thus curtailed amounted to about \$166,000,000.

CHART 19

1944 PROCUREMENT PROGRAM BY USE



1945 PROCUREMENT PROGRAM BY USE

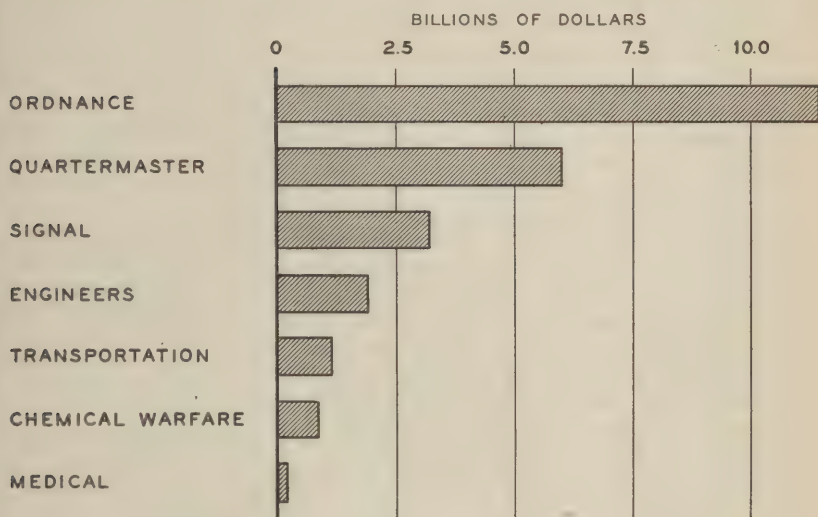


Despite the various adjustments which were made in the Army Supply Program, Ordnance procurement continued to be the single largest component part of total requirements. For the calendar year 1944 46 percent of total requirements on a dollar basis were for Ordnance equipment and supplies. The next largest component part was that of the Quartermaster Corps, amounting to 24 percent of the total. The Signal Corps accounted for 13 percent. The relationship between the various parts of the total program is shown on the accompanying chart.

CHART 20

1944 PROCUREMENT PROGRAM

BY TECHNICAL SERVICE



The Review of Supply Program Procedures

On 2 July 1943, the Chief of Staff established the War Department Procurement Review Board headed by Maj. Gen. Frank McCoy, with instructions to examine current procurement plans and the procurement supply machinery of the Army Service Forces and the Army Air Forces. The Army Service Forces prepared several exhibits for presentation to the Board and many officers presented oral testimony. In reporting to the Chief of Staff on 31 August 1943, the Board concluded that, judged by military results, the supply system was functioning efficiently, that the organization for supply was sound, and that its procedures were adequate. The Board called attention to some of the problems in computing procurement requirements and recommended more careful screening of requirements together with a reexamination of the factors used in computing them. Finally, the Board recommended a thorough restudy of the reserves included in the Army supply program.

The Deputy Chief of Staff of the War Department on 3 September 1943 established a special committee for restudy of reserves headed by Maj. Gen. G. J. Richards. A representative of the Army Service Forces was appointed on the committee. The committee gave particular attention to the strategic reserve, theater reserves, United States stockpiles, the day of supply, and replacement, distribution, and shipping loss factors.

Initial issue requirements including the strategic reserve were supply requirements which were calculated by the Army Service Forces according to the troop basis plans of the War Department General Staff. The scheduled number of units multiplied by the type of equipment

authorized gave initial issue requirements. The time element in this procurement was determined by the scheduled activation dates. A strategic reserve was set forth in the troop basis also, and equipment items requiring some time to produce were included in the Army Supply Program. This reserve was used to meet unexpected needs of the American Army or of our allies. The committee recommended changes in activation dates which had the effect of reducing certain parts of the 1944 procurement program. These changes were reflected in the troop basis provided the Army Service Forces for the computation of the Army Supply Program on 1 February 1944.

The committee also recommended that the troop basis used in supply planning be prepared on a theater basis showing the actual area within which particular units would be employed. Such action would assist in making supply requirements more realistic. This was a change that was dependent upon General Staff action. Actually, considerable portions of the Army supply program as computed by the Army Service Forces reflected prospective theater deployment of troops. Replacement requirements were based upon weighted average strengths anticipated for each theater of operations. In addition, the troop basis showed anticipated strengths by temperate, tropic, and arctic climates. Ammunition requirements also were based upon estimates of needs from various theaters. In the absence of a complete deployment plan for all troop units, the Army supply program could not be calculated entirely upon this basis. Plans were made for such a calculation in the revision of the Army supply program on 1 August 1944.

A second element of importance in the determination of supply requirements was the replacement of equipment worn out or lost in battle. A third factor was the levels of supply to be maintained in oversea theaters and in the zone of the interior to meet continuing distribution demands. These levels were the working inventories of the military supply system. The size of these inventories was reflected in the requirements of the Army supply program. In various calculations of the Army supply program an allowance was also made for prospective shipping losses resulting from enemy action. The committee for restudy of reserves recommended that the shipping loss factor be dropped entirely from the Army supply program. This was done before the end of the calendar year 1943.

The Special Committee for Restudy of Reserves reported to the Deputy Chief of Staff in December 1943. On 1 January 1944 the Deputy Chief of Staff issued a memorandum on supply levels and supply procedures to the divisions of the War Department General Staff and to the Army Ground Forces, Army Air Forces, and Army Service Forces. With certain modifications the 57 paragraphs of this memorandum directed the implementation of the recommendations of the special committee.

As a result of these instructions three major changes were made affecting the computation of procurement requirements. In the first place, the level of supply, or the inventory, carried overseas and in the United States was substantially reduced. The formula recommended by the special committee for the computation of oversea levels was placed into effect and oversea commanders were informed of the new levels by the War Department. For example, the total supplies of

class I and class III items that might be maintained in the European theater and in the North African theater were fixed at 60 days' needs while for class II, IV, and V supplies the level was fixed at 75 days' needs. In the Central Pacific the level for class I and class III supplies was 60 days and the level for class II, IV, and V supplies was 90 days. In the China-Burma-India theater the level for class I and III supplies was 120 days and the level for class II, IV, and V supplies was 180 days. On an average basis oversea supply levels were reduced from 120 days' supplies to 97 days' supplies. With the removal of the submarine threat large inventories were no longer needed in oversea commands. These new levels of supply were used in the computation of the Army supply program of 1 February 1944. No oversea distribution or shipping loss factors other than these inventories were included in the calculation of supply needs. In addition, depots in the United States carried a 60-day inventory for oversea shipments.

War Department Circular No. 85 on 25 February 1944 prescribed a 105-day distribution level for supplies within the zone of the interior. In general this 105-day level was divided between 45 days' supplies carried at posts, camps, and stations and 60 days' supplies carried at depots. A 60 days' supply was also carried at depots to meet overseas needs. In addition, the strategic reserve, a production reserve, and a contingency reserve might be held within the United States.

In the second place, additional attention was given to the computation of replacement factors affecting supply requirements. In the 1944 Army Supply Program 90 percent of all equipment, as contrasted with consumable supplies, was for replacement of equipment already produced. The importance of careful calculation of replacement needs was accordingly clear. For example, the replacement factor for 105-mm. howitzers in a theater of operations was calculated at 3 percent per month. This meant that 3 new howitzers per month or 36 per year would have to be provided to replace losses in every 100 issued as original equipment to troops overseas. In the zone of the interior the replacement factor for most ordnance items was zero. The replacement factor for a pair of shoes was 14.2 percent per month or complete replacement of every pair of shoes every 7 months. Within the zone of the interior a pair of shoes was replaced on the basis of once every 12 months.

Many difficulties beset the determination of replacement factors. In considerable part the factors used in the calculations of the Army Supply Program were based upon experience in the First World War. Adequate information about replacements was not received from overseas commanders with the growing activity overseas in World War II. For this reason teams were sent out by the Army Service Forces at the end of the fiscal year 1943 to review wastage rates overseas and to recommend adjustments in established replacement factors. During the first 6 months of the fiscal year 1944 the replacement factors for 796 items out of a total of 4,298 items for which factors had been established were revised. Of the changes, 713 were downward revisions. For example, the replacement factor for tractors in theaters of operations was reduced from 8 to 4 percent. After the issuance of the directive of 1 January 1944 more exact replacement data was required from overseas theaters in the form of a monthly report on

matériel consumed. Instructions on this report were issued on 10 February 1944. This showed actual quantities of equipment in use and replacement issues for the same period. A replacement factor was then determined by dividing replacements by quantities in the hands of troops.

A variation of only 1 percent in replacement factors caused considerable variation in actual quantities included in the Army Supply Program. For example, a change of 1 percent in the overseas replacement factor for shoes meant an adjustment in shoe requirements for 1 year of 1,709,000 pairs. A 1 percent change in the replacement factor for the medium tank meant a difference of 642 tanks in the Army supply program for 1 year. By the end of the fiscal year considerable improvement had been made in the determination of replacement factors and these in turn were reflected in the calculation of the Army supply program.

In the February 1944 Army supply program an average of 1 month's replacement requirements for all major items of equipment was removed. On an overall basis this amounted to a 5 percent reduction in replacement requirements.

In the third place, the 1 January 1944 instructions from the War Department directed the Army Service Forces to reduce requirements by substituting reserve production capacity for actual reserves of finished items. The requirements included in the 1 February 1944 computation of the Army Supply Program were carefully reviewed by ASF headquarters to determine possible reductions where ample productive capacity was available. Total reductions effected amounted to some \$393,000,000, of which \$367,000,000 was in the Ordnance Department and nearly \$21,000,000 in the Quartermaster Corps. The two types of supplies primarily affected by this type of reduction were artillery ammunition and small arms ammunition. Since plants for both purposes could be held in standby status for resumption of production in the event of increased needs, actual production was substantially curtailed.

The computation of ammunition requirements was a separate problem. Established policy provided that overseas ammunition needs would be computed on the basis of a day of supply which represented the average rate of expenditure per weapon per day. The day of supply was to be adjusted as overseas commanders gained experience in actual operations. By July 1943, an excess supply of ammunition of more than 250 percent had accumulated in one overseas theater. Certain theaters calculated ammunition needs on the basis of number of rounds and there was some belief that all ammunition supply should be determined in terms of number of rounds rather than in terms of days of supply. For planning procurement operations the Army Service Forces urged that the single day of supply be retained as a basis for calculating requirements. There was considerable question whether past experience could be used as the sole guide before planning future needs and in addition much time was required in order to obtain complete data on ammunition expenditures from each theater.

Most recommendations received by the ASF from overseas commanders proposed an increase in the quantity of ammunition constituting a day of supply. These recommendations were scrutinized care-

fully but very few upward changes were actually made. A study of expenditures in several theaters for 5 months during the calendar year 1943 indicated that actual ammunition expenditures were generally lower than the average rounds per day authorized by established days of supply. In February 1944 the Army Service Forces recommended that distribution and procurement be based on rounds and types rather than upon the day of supply and that theater levels be computed separately. This recommendation was disapproved in favor of the establishment of separate days of supply for each theater. These revisions were completed by June and were then incorporated in ammunition supply requirements. The excess supplies that existed in overseas theaters were lowered by reducing replenishment shipments.

Like ammunition, subsistence requirements demanded separate consideration. In determining subsistence requirements on an annual basis factors for loss and distribution were added to the actual number of rations required per man per day. In the August 1943 Army Supply Program 1944 subsistence requirements for troops overseas were figured on the basis of 694 days' supply per average man overseas. Within the zone of the interior 90 days were added to 365 days' needs for inventory requirements. The overseas requirements represented a 20 days' reduction from those previously incorporated in the Army Supply Program. In calculating the Army Supply Program on 1 February 1944, the zone of the interior inventory factor was reduced from 90 to 75 days requirements. Overseas inventory levels were reduced 16½ percent, or an over-all reduction for overseas needs of 12.4 percent.

In accordance with the directive from the Deputy Chief of Staff immediate requests were forwarded to all theaters for information about spoilage, loss, and pilferage of rations which might indicate the possibility of reducing reserve stocks even further. These studies were not completed by the end of the fiscal year. Some additional reduction in subsistence requirements was nonetheless under consideration.

Another special problem in requirements was that of spare parts. By the beginning of the fiscal year considerable backlogs in the repair of motor vehicles and other equipment were attributed to shortages of spare parts. In great measure this difficulty was the result of storage and stock control methods rather than actual shortages. Nonetheless special attention was given to insuring that spare parts requirements were adequately computed and included in the Army Supply Program. ASF Circular No. 19 on 17 January 1944 centralized responsibility for supervising the calculation of spare parts needs in the Requirements Division of ASF headquarters, which was the unit directing the preparation of the supply program.

The number of approved spare parts lists expanded steadily during the remainder of the year. A new section of the Army Supply Program was planned to show requirements for spare parts by time periods spare parts needed to maintain equipment for 12 months after delivery were included in initial delivery requirements. For the calendar year 1944 required production of automotive spare parts exceeded 1 billion dollars. War Department Circular 227, 1944 prescribed detailed procedures for the compilation of spare parts lists which were to be used as the authorized basis for procurement under the supply program. This circular also provided that spare parts were

to be procured concurrently with an end item only when that item was intended for initial issue. In other words, spare parts were not included in requirements for replacement equipment. The instructions also included factors to be used in determining the spare parts for inclusion in spare parts lists.

Supply Control

The criterion for determining the successful calculation of supply requirements was balance between supply and demand. The growing quantities of supplies held in storage during the fiscal year 1944 made it imperative to devise some method for relating issue experience to procurement requirements. In order to develop such data, ASF Circular 67 was issued on 7 March 1944. This circular pointed out that the first and major phase of ASF war production had called for the provision of initial or "capital" issue equipment for a rapidly expanding army, as well as the provision of similar equipment for our Allies. At such a time it was impossible to plan procurement requirements upon the basis of past issue. This phase of war procurement was approaching completion in early 1944. Except for comparatively few items, future procurement was scheduled to meet estimated replacements and operational requirements. Accordingly production should closely approximate consumption. A closer procurement control was essential to assure that the requisite supplies were available on time but that surpluses were not accumulated. The circular pointed out that procurement schedules which would result in the creation of excess stocks must be discovered and corrected before the surpluses accumulated. To realize these policies a supply control system was established.

In order to relate procurement and distribution data, supply requirements were divided into two broad groups. The principal group, labelled the P group, consisted of items of major importance from a military or monetary standpoint. This group also included items whose requirements could not readily be estimated on the basis of past issue experience alone. All other supplies were included in the secondary or S group. All material in group P was itemized in the Army Supply Program. Requirements for these items were to be reviewed once each quarter, when complete analysis was to be made of procurement requirements, stock position, and expected issue demands. All items in the S group were to be reviewed semiannually. For both requirements in the S and P groups supply and demand studies were to be prepared showing future issue requirements, authorized inventory levels, and necessary adjustments in procurement schedules and stocks. Basic records for these studies were prescribed for each technical service.

As a part of the supply-control system a new supply-record form was devised and ASF Manual 413 was issued providing standard instructions on the conduct of supply and demand studies. By 30 June 1944 the number of procurement items brought under the supply control reporting system totalled 1,551. These covered about 14 percent of the total procurement program for 1944. About one-tenth of the items were controlled items of equipment. For 1,525 of the 1,551 items sufficient data were available to compare expected supply status on 30 June and 31 December 1944. Of these, 614 items were in short supply, 809 were in long supply, and 102 were in balanced

supply. These results were not representative of the supply position of the Army Service Forces, since initial attention in preparing supply and demand studies was given to items where it was suspected that planned procurement would exceed actual demand.

In order to simplify the calculation of supply status, War Department Circular 206, published on 24 May 1944, provided that depots within the United States might hold a 90-day supply for both overseas and domestic distribution. In addition, a reserve stock was authorized to consist of 90 days of medium and heavy ammunition, a strategic reserve of initial issue equipment as authorized by the troop basis, and a 90 days' replacement supply of initial issue equipment. In addition, there might be a production reserve of items authorized for advance procurement. Accordingly contingency and utility reserves were eliminated. Also, depots did not have to show separately the supplies held for issue within the United States and supplies held for issue overseas. The simplification of supply book-keeping thus achieved facilitated the calculation of authorized inventories for comparison with issue experience and procurement schedules.

At the end of the fiscal year plans were laid for rapidly extended coverage of the supply control system to all major procurement items in the Army Supply Program. Full coverage was expected by the end of the second quarter of the next fiscal year.

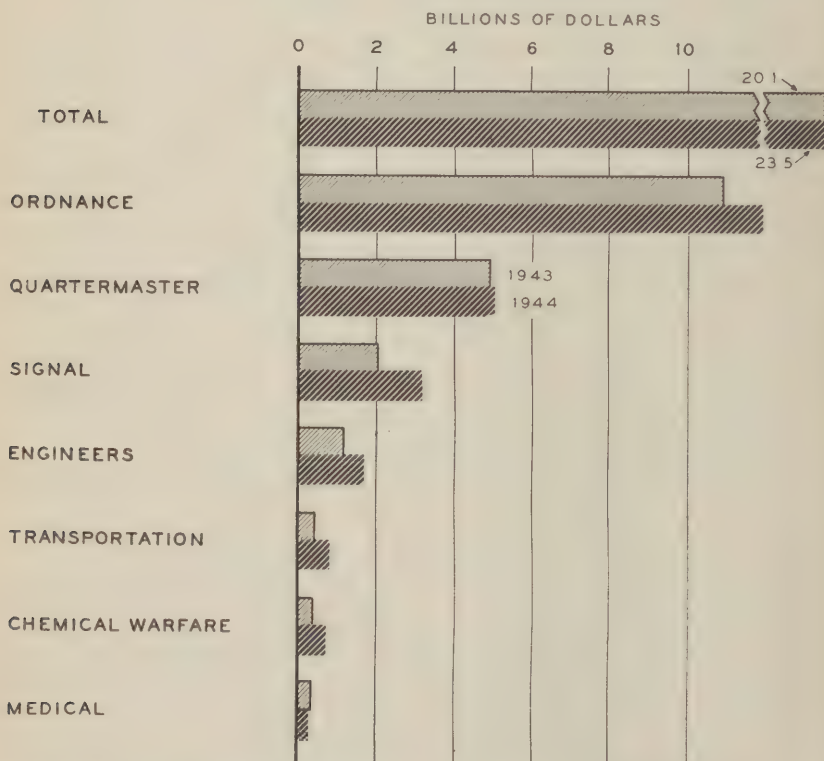
Chapter 8. PROCUREMENT RECORD AND PURCHASING ACTIVITY

The fiscal year 1944 was a period of changing procurement activity. As the requirements set forth in the Army Supply Program were adjusted to meet changing demands, these altered requirements were quickly translated into reduced or increased production programs.

For the fiscal year the total value of deliveries to the Army Service Forces amounted to 23.5 billion dollars. In the preceding fiscal year total deliveries were 20.1 billion dollars.¹ Deliveries to each tech-

CHART 21
ASF DELIVERIES

FISCAL YEARS 1943 AND 1944



¹ The 1943 figure has been adjusted downward from the figure used a year ago because of changes in the price index.

nical service in the fiscal year 1944 were of greater value than in 1943 except for the Medical Department.

The total value of Ordnance deliveries in the fiscal year 1944 was some 1 billion dollars more than in the preceding year. Signal Corps deliveries showed the greatest single increase based upon dollar value, being \$1,125,000,000 more in 1944 than in 1943. The deliveries to the Quartermaster Corps were \$42,000,000 larger than the previous fiscal year. Deliveries to the Corps of Engineers in the fiscal year 1944 were nearly \$500,000,000 greater than in 1943. On a percentage basis deliveries increased the most during the year for the Transportation Corps, amounting to twice as much as deliveries in 1943. The value of these deliveries was some \$828,000,000. Deliveries to the Chemical Warfare Service also increased nearly twice during the fiscal year 1944 although the dollar total was some \$694,000,000.

Within the procurement operations of individual services there were considerable differences in deliveries for the fiscal years 1944 and 1943. The accompanying table shows the dollar value of deliveries by major types of matériel. From this it will be seen that artillery ammunition (other than heavy field) deliveries in 1944 exceeded those in 1943 as did the deliveries of heavy trucks, medium trucks, heavy field artillery, and self-propelled weapons. On the other hand, deliveries in small arms ammunition, heavy field artillery ammunition, tanks, and light trucks were smaller in 1944. Every category of Signal Corps equipment showed increased deliveries in the fiscal year 1944. Deliveries of clothing and equipage were substantially smaller in 1944 than in 1943. Procurement of subsistence and of general supplies, however, was larger in 1944. The value of deliveries of construction equipment to the Corps of Engineers was increased more than twice in the fiscal year 1944 over the fiscal year 1943. There was a substantial increase also in the delivery of general equipment and of tractors to the Corps of Engineers. Considerable decline occurred in deliveries of antiaircraft matériel. All categories of Transportation Corps equipment were procured in larger quantities in the fiscal year 1944 than in 1943. With three exceptions—chemical agents, protective matériel and service equipment—this was also true of the procurement program for the Chemical Warfare Service. Deliveries of general medical supplies and equipment were lower in the fiscal year 1944 than in the fiscal year 1943 while deliveries of drugs and chemicals increased by 20 million dollars.

The comparison in procurement operations between the fiscal year 1944 and the fiscal year 1943 can be further illustrated by specific items. In the fiscal year 1944, 192,000 2½-ton trucks were delivered to the Ordnance Department compared with 205,000 trucks in the fiscal year 1943. The deliveries of trucks heavier than 2½-ton trucks totalled 39,000 in 1944, nearly 9,000 more than in the preceding year. While nearly 34,000 tanks of all kinds were delivered in the fiscal year 1943, only some 20,000 tanks were delivered in the fiscal year ending 30 June 1944. Deliveries of self-propelled artillery carriages increased, however, numbering over 19,000 in 1944 compared with less than 17,000 in 1943. Deliveries of artillery pieces of 105-mm. caliber and under totalled 85,500 in the fiscal year 1944, about 50 percent of the deliveries in the preceding year. Deliveries of anti-aircraft artillery declined from 24,400 in the fiscal year 1943 to 15,200 in the fiscal

ASF deliveries fiscal year 1943 versus 1944

[Thousands of dollars]

Service and major group	1943	1944
Total.....	\$20, 127, 573	\$23, 520, 311
Ordnance Department.....	10, 945, 815	11, 930, 690
Small arms matériel.....	707, 392	989, 375
Small arms ammunition.....	1, 212, 456	1, 180, 696
Artillery Ammunition (other than heavy field and rockets).....	1, 272, 227	1, 922, 357
Heavy field artillery ammunition.....	250, 054	204, 825
Mines, grenades, bombs, and pyrotechnics.....	619, 370	954, 526
Heavy field artillery.....	56, 236	123, 712
Artillery other than heavy field.....	1, 321, 865	1, 062, 031
Tanks.....	2, 097, 518	1, 464, 462
Self-propelled weapons.....	681, 574	746, 284
Miscellaneous combat vehicles.....	340, 122	686, 478
Light trucks.....	858, 124	830, 932
Medium trucks.....	814, 133	856, 686
Heavy trucks.....	367, 160	476, 470
Other vehicles and miscellaneous.....	347, 584	431, 856
Signal Corps.....	2, 030, 517	3, 155, 742
Aircraft equipment.....	546, 413	679, 059
Airborne radar.....	185, 449	277, 297
Ground radar.....	263, 799	398, 110
Special ground radio.....	41, 799	127, 483
Ground and vehicular equipment.....	573, 889	795, 717
Wire communication and miscellaneous.....	419, 168	878, 076
Corps of Engineers.....	1, 156, 317	1, 650, 321
Antiaircraft.....	180, 284	86, 743
Boats and bridging equipment.....	73, 380	95, 054
Construction equipment.....	246, 098	562, 807
General equipment.....	480, 803	687, 284
Tractors, crawler type.....	175, 752	218, 433
Chemical Warfare Service.....	360, 630	694, 426
Ammunition.....	48, 629	111, 886
Bombs.....	75, 059	327, 446
Chemical agents.....	43, 413	27, 215
Protective matériel.....	128, 538	124, 797
Service equipment.....	25, 708	25, 268
Weapons.....	8, 765	10, 325
Miscellaneous.....	30, 518	67, 489
Medical Department.....	344, 426	299, 543
Drugs, chemicals, biological.....	107, 459	127, 084
Other medical supplies and equipment.....	236, 967	172, 459
Quartermaster Corps.....	4, 918, 290	4, 1960, 796
Clothing.....	1, 566, 544	1, 161, 571
Equipage.....	972, 418	459, 756
General supplies.....	552, 888	629, 819
Subsistence.....	1, 826, 440	2, 709, 650
Transportation Corps.....	371, 578	828, 793
Self-propelled vessels.....	116, 051	291, 332
Non-propelled vessels.....	37, 390	95, 453
Cranes and derricks.....	1, 750	14, 693
Railway cars.....	58, 392	91, 463
Locomotives and locomotive cranes.....	80, 840	146, 908
Miscellaneous rail.....	21, 878	36, 103
Miscellaneous marine.....	55, 277	152, 841

year 1944. On the other hand, deliveries of heavy artillery, more than 105 mm. in caliber, numbered 3,177 in 1944, almost 2,000 more than were delivered in the previous year. More than 20,000 mortars were delivered in 1944 compared with under 17,000 in 1943. Some 23,000 crawler-type tractors were delivered in 1944 compared with 18,400 in 1943. Deliveries of railway cars increased from 30,635 in 1943 to 42,998 in 1944; deliveries of self-propelled vessels from 2,706 to

3,469; and deliveries of locomotives and locomotive cranes from 1,496 to 2,321.

Chemical Warfare Service procurement of flame throwers, incendiary bombs and the 4.2-inch mortar were greatly expanded in the fiscal year 1944. In the first half of the year the deliveries of 4-pound incendiary bomb clusters numbered 20,025. In the second half of the year the number of clusters delivered was over 614,000. More than 335 million pounds of incendiary chemicals were delivered from 600 manufacturers. Deliveries of the 4.2-inch mortar in 1944 totaled 2,680, compared with 1,600 delivered in the fiscal year 1943. The deliveries of high explosive shells for the 4.2-inch mortar were 5 times greater in the fiscal year 1944 than in 1943. In the last half of the fiscal year 1944 deliveries of flame throwers exceeded the total number of all deliveries up to that time. More than 8 million light-weight service gas masks were also delivered in 1944.

A major accomplishment in the procurement of Army clothing was realized after the adoption of the combat boot to replace the service shoe and canvas legging combination. This was achieved by reducing the procurement of other types of Army footwear. Few suppliers had previous experience in tanning the type of light-weight leather specified for the cuff of the boot. The construction including a 2-buckle leather cuff had never before been attempted by the shoe manufacturing industry. Despite these difficulties, production was switched from 1,500,000 pairs of service shoes and 4,000 pairs of combat boots in January 1944 to 370,000 pairs of service shoes and 1,220,000 pairs of combat boots in June 1944. The production of herringbone twill jackets, 1-piece suits, and trousers was stepped up from 37.7 million units in 1943 to 67.4 million units in the fiscal year 1944. The production of the insecticide powder DDT was increased from approximately 20,000 pounds a month at the beginning of the fiscal year to over 400,000 pounds per month in June 1944. Deliveries of the new trenching shovel rose from 50,000 in October 1943 to a million in February 1944. Deliveries of soap in the last half of the fiscal year 1944 were greater than the deliveries in the whole preceding year.

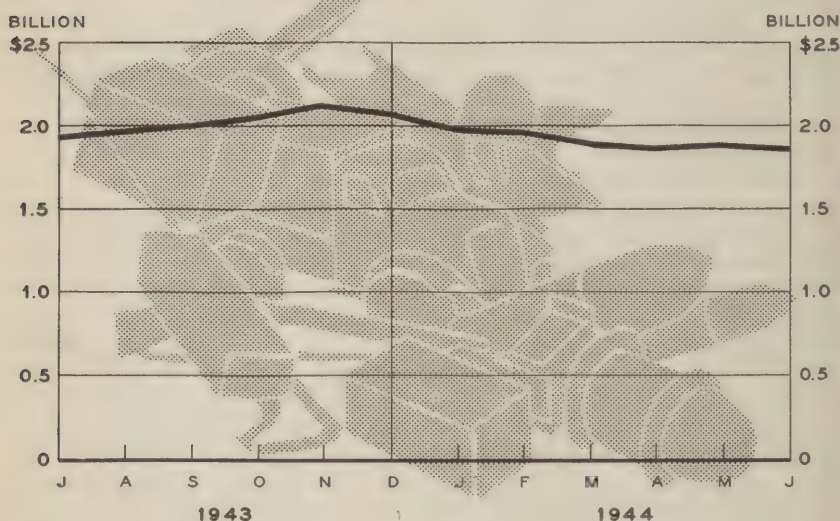
Two generalizations were evident in reviewing the procurement record of the Army Service Forces for the fiscal year 1944. In the first place, procurement adjustments followed closely upon the heels of changing supply requirements. The increased quantities for some items in 1944 over 1943 were to be contrasted with declining deliveries for other items in the fiscal year 1944. On the whole, total procurement activity in 1944 was only some 17 percent greater than in the preceding year.

In the second place, it was evident that increased deliveries were made primarily in the fields of consumable supplies such as subsistence, artillery ammunition, and incendiary bombs. The other field of large-scale increases was for equipment needed in the construction of roads and ports and in the hauling of supplies. There were also greatly increased deliveries of communications equipment.

The month-by-month course of deliveries to the Army Service Forces as a whole and to each of the technical services is shown in the accompanying charts. Peak deliveries for the ASF occurred in November 1943. There followed 7 months of steady downward trend,

momentarily reversed in the month of May. This downward trend in deliveries became a cause of grave concern by the end of the fiscal year. By 30 June 1944 only 46 percent of the total requirements of the Army Supply Program for the calendar year 1944 had been delivered. Production forecasts for the 6 months from July through December 1944 called for substantial increases in deliveries. The forecasts of deliveries as of 30 June 1944 are shown in chart 26 contrasted with the actual deliveries for the six months from January through June 1944. The deliveries forecast for November 1944 were substantially above the 2.1 billion dollars of deliveries achieved in November 1943.

CHART 22
ASF MONTHLY DELIVERIES
DURING FISCAL YEAR 1944



The declining deliveries during the last half of the fiscal year 1944 resulted in the postponement of many deliveries until the first half of the fiscal year 1945. There was considerable uncertainty whether the downward trend in actual deliveries could be halted. Experience from January to June 1944 indicated that all forecasts made more than 1 month in advance were too optimistic. Thus the 30 April forecast for June deliveries was approximately 9 percent higher than actual June deliveries. On 1 June the forecast deliveries for the month were reduced 5 percent. The continuation of this trend would result in a failure to realize required procurement for the calendar year 1944.

Moreover, the forecasts which were continually being revised downward were for the very procurement programs which were most important to increase, including heavy trucks, heavy artillery ammunition, heavy artillery, tractors, construction equipment, and airborne radar.

CHART 23

ASF MONTHLY DELIVERIES DURING FISCAL YEAR 1944

BY SERVICES

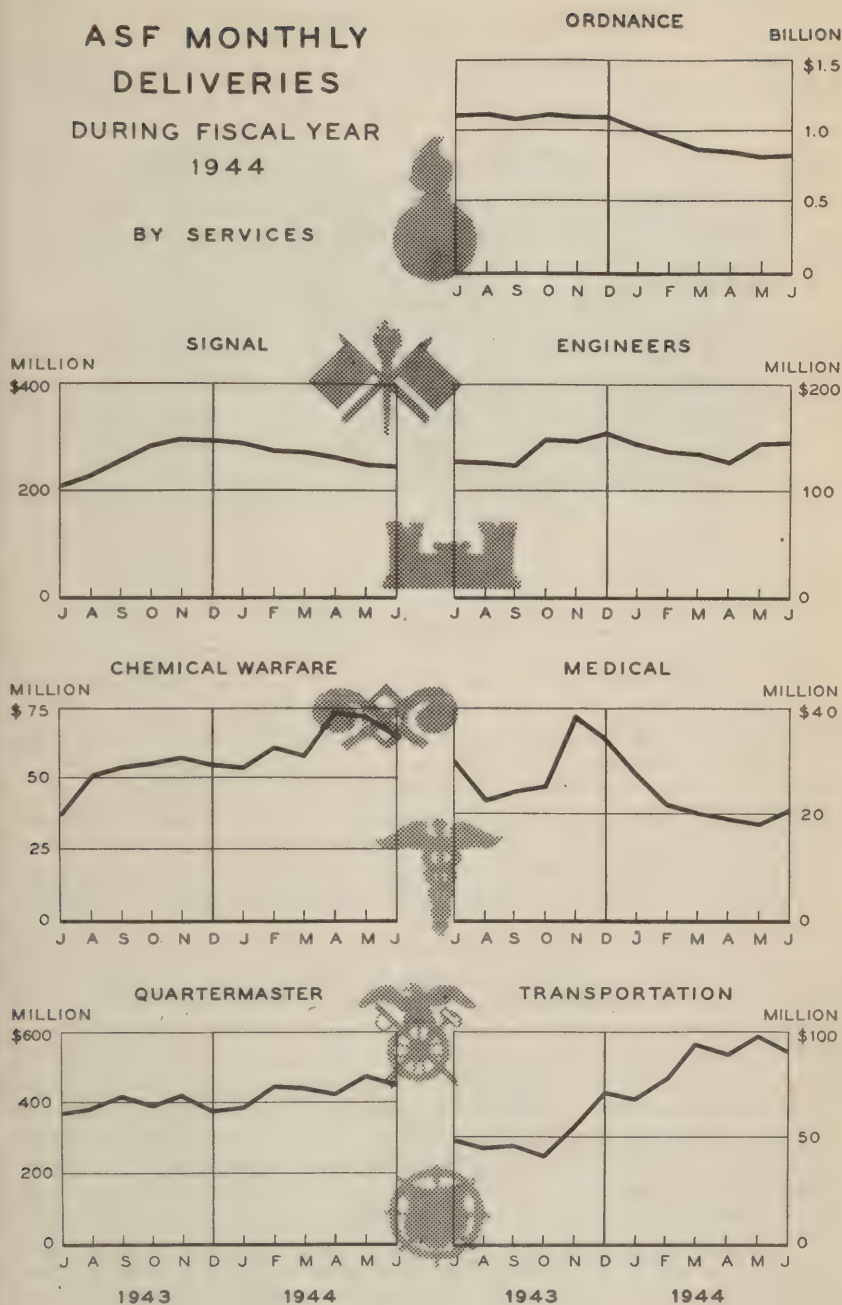
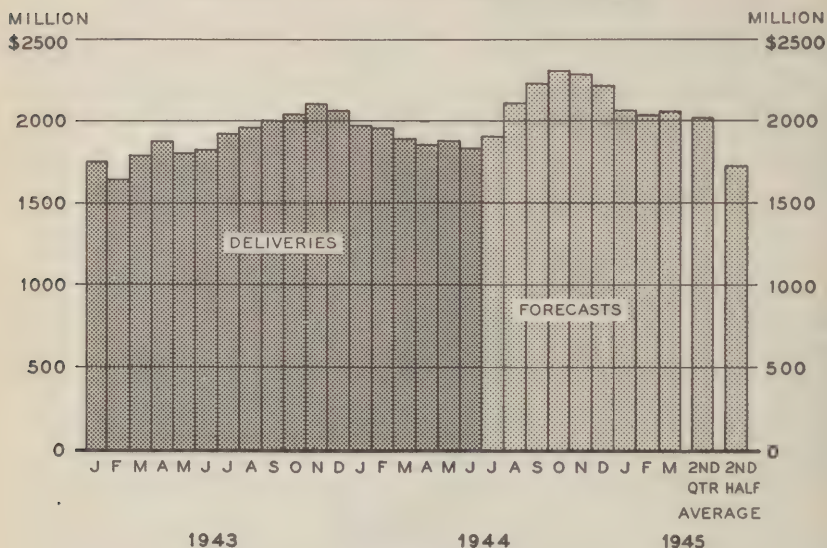


CHART 24

MONTHLY DELIVERIES AND FORECASTS

MAJOR ASF PROCUREMENT ITEMS



PURCHASING OPERATIONS

During the fiscal year 1944 purchasing policies and procedures established in prior years were consolidated and confirmed. The procurement regulations remained the basic guide for all purchasing activities. Continued attention was given to centralizing the procurement of common items, to the utilization of smaller plants, to reduction in prices and to improvements in procurement procedures. While there was no let-up in the emphasis upon the placement of contracts in sufficient time to obtain necessary deliveries, more attention was given to the improvement of purchasing methods. Special attention was given to better pricing.

The total volume of purchasing activity remained about the same during the fiscal year 1944 as in the preceding year. Obligations of procurement funds amounted to approximately 23 billion dollars compared with some 28 billion dollars the year before. The volume of individual purchase transactions amounted to over 900,000, substantially the same as in 1943. The district procurement offices of the seven technical services continued to be the main purchasing agencies for the Army Service Forces. The purchase of medical items was centralized in New York City during the year, when the St. Louis procurement office was closed. The Chemical Warfare Service closed its procurement office in Atlanta during the year. On 30 June 1944 there were 55 district procurement offices in operation.

Headquarters of the Army Service Forces continued to review and approve awards of single contracts amounting to \$5,000,000 or more, to approve contract forms, and to approve clauses deviating from

standard forms. During the year criteria were established for converting cost-plus-a-fixed-fee agreements into fixed price contracts. Substantial changes were made in procurement regulations when the Revenue Act by 1943 removed many exemptions from Federal excise taxes on purchases of the War Department.

The Procurement Assignment Board in ASF headquarters centralized procurement responsibility in a single service for 1,428 items in the 12 months ending 30 June 1944. Among the items whose purchase was centrally assigned were flags and accessories, freon, fire extinguishers, lumber, office supplies, dry-cell batteries, public-address systems, inter-office communication systems, and track-laying tractors with a speed of 12 miles per hour.

With the many adjustments required in procurement operations during the year, it became necessary to have current information about the number and value of prime War Department contracts outstanding. Lists of all contracts over \$10,000 outstanding on 30 November 1943 were submitted to ASF headquarters by the 7 technical services and the Army Air Forces. These lists were consolidated into a single alphabetical listing by contractors. As of 30 November there were 48,730 active contracts over \$10,000 with an aggregate original value of about 74 billion dollars. A similar report with data as of 30 June 1944 was in preparation at the end of the fiscal year.

An estimate was also made of the total number of items procured by the Army Service Forces. These data are shown in the accompanying table. Of the more than one million items, some 820,000 were classified as spare parts. These figures represented approximately the number of individual articles on which inventory records had to be maintained by the ASF.

Number of items purchased by ASF

Technical service	Number of items procured	
	Total	Spare parts
ALL.....	1, 063, 200	820, 600
Ordnance.....	387, 300	346, 500
Signal.....	95, 000	76, 000
Engineers.....	236, 000	225, 000
Chemical warfare.....	12, 600	12, 000
Medical.....	7, 300	1, 100
Quartermaster.....	175, 000	60, 000
Transportation.....	150, 000	100, 000

Procedural Developments

Necessary reductions in personnel during the year without any corresponding reduction in the physical volume of procurement work made it essential that purchasing procedures be simplified as far as possible. Surveys of selected procurement district offices were made which resulted in recommendations for the simplification and standardization of procedures in these offices. The recommendations were tested at several district offices and found generally satisfactory. A tentative manual on procurement district office procedures was published and at the end of the year the revised methods were being installed at all procurement district offices of the Army Service Forces.

As one phase of this effort a combined purchase order, voucher, receiving report, and delivery order for the procurement of items up to \$50,000 in total value was designed and put into general use. This form eliminated from two to four documents and substantially reduced the number of copies of forms and records maintained in the district office.

In developing the pricing program, War Department standard procurement forms, Nos. 1 and 2, were developed and put into use by all technical services. Form No. 1, the Request for Proposal, was an invitation to a prospective contractor to make an offer. Form No. 2, Contractor's Proposal, was an instrument whereby the prospective contractor submitted his offer to the Government. This form was designed to provide the cost and price data necessary for an adequate analysis and negotiation of prices. Because certain types of procurement did not readily lend themselves to such a standard form, special modifications were created. At the end of the year, however, all technical services were using the same basic form proposal.

In the fiscal year no substantial changes were made in the procurement regulations on requisitioning. Twenty-six requisitions were served upon contractors to provide beef, chickens, pepper, and rice required by the Quartermaster Corps; brick building supplies and caterpillar parts required by the Corps of Engineers; and certain equipment for an ammonia system required by the Chemical Warfare Service.

The procurement regulations governing the use of mandatory orders to supply items to the War Department, authorized by the Selective Training and Service Act of 1940, were completely revised to place authority with the technical services to issue such orders in certain cases without approval of higher authority. Ten mandatory orders were issued during the year—for boneless beef, mealed rice, rubber heels, and engine mounts and parts. In each case the desired suppliers either refused to produce the required quantities or refused to produce at prices deemed reasonable by the procuring service.

The Ordnance Department developed a pool order contract during the year to encourage inexperienced manufacturers to produce heavy truck transmissions. Inexperience usually meant initial high production costs. The pool order obviated the necessity for amending the prime contracts for heavy trucks in order to adjust prices paid for transmissions. Instead, transmission producers sold to prime contractors at the established price while the War Department paid the difference between this price and the one necessary to encourage new heavy truck transmission production.

In order to expedite spare parts production the letter purchase order was amended during the year to permit certain contract provisions to remain inoperative until price and delivery schedules were eventually fixed. Contractors thus commenced at once to produce and deliver spare parts subject to later establishment of price and delivery schedules.

Pricing

The pricing of War Department commodities was an inseparable part of the actual production of needed supplies. The price of an article directly influenced the cost of producing it. A price based

upon liberal cost estimates generally resulted in greater expenditures in the production of an item. Conversely, a price based upon close cost estimates ordinarily resulted in lower production costs, because it forced the contractor to use ingenuity in keeping his expenditures to a minimum. To a substantial extent, therefore, price determined, through its influence on cost expenditure, whether a contractor was economical in his utilization of the true economic resources of the nation, including labor materials and machinery.

The fiscal year 1944 saw the effectuation of the War Department policy to buy war supplies at close prices. This policy was designed to make prices contribute to the greatest possible output of war goods; to help check inflationary tendencies resulting from higher purchasing power, higher costs and reduction of available supplies; to prevent public displeasure at war profiteering; and to minimize the monetary cost of the war. In August 1943 Army Service Forces Manual 601, Pricing in War Contracts, was published as a guide to procurement officers in making an informed judgment about the acceptability of price bids. All contracts submitted to ASF headquarters for approval were reviewed from a pricing point of view. Where it appeared that an adequate pricing job had been done, the price was approved without comment. In other cases procurement offices were required to submit additional information to justify the price. In some instances contracts were returned for renegotiation and resubmission at prices more nearly consistent with the close pricing policy. This educational process was progressive, since pricing standards continued to improve.

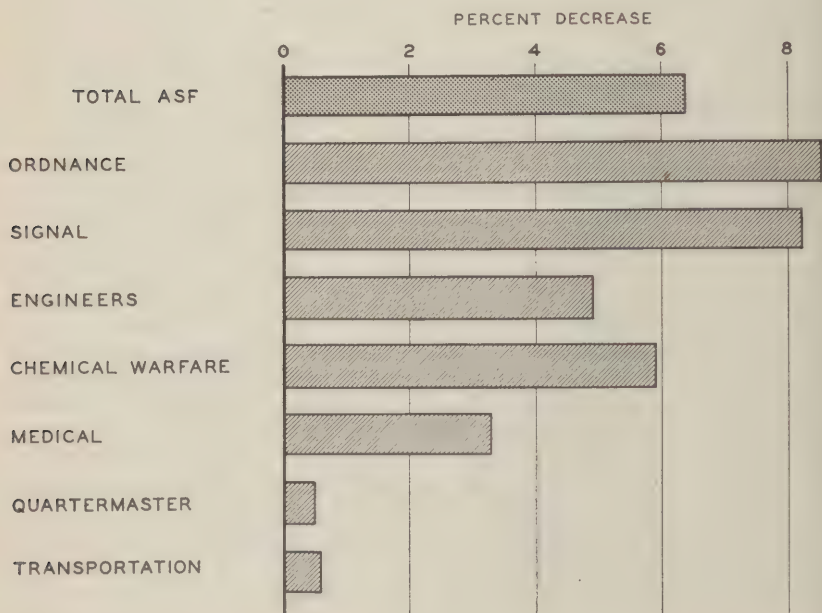
Each technical service and all procurement district offices created cost analysis branches during the year. These branches developed careful data about cost of production by various contractors and prepared "yardstick costs" to measure the prices of different contractors. Individuals in ASF headquarters and in the offices of chiefs of services assisted district offices in the operation of these price and analysis branches.

As the close pricing policy became more successful, it became apparent that contractors were reluctant to assume the risks of increases in costs of labor and of materials over which they had no control. To insure against these factors contractors frequently requested an escalator clause in their contracts. Since increases based on indexes was difficult to administer and might nullify the close pricing policy, the basic idea of optional periodic pricing was developed. By the use of the optional periodic pricing clause it was possible to establish a lower price in a contract and thus bring into play the pressure for efficient production at lowest possible cost. On the other hand, at the request of the contractor all cost factors could be reexamined and changes made when labor or material costs increased during the life of the contract. The use of the optional periodic pricing clause resulted, for example, in the elimination of a 5 percent contingency charge from one contract which was equivalent to a price reduction of \$1,600,000. Periodic pricing also served the best interests of the War Department, since it permitted reduction in prices as production costs were lowered. Periodic pricing of the 155-mm. howitzer during the year, for example, resulted in reduction of unit costs from \$3,776 to \$3,182 and then to \$2,800.

Many contractors in the United States did business with several technical services as well as with other departments of the Government. In these instances it became evident that one contracting office or one procurement agency could not take into effective consideration the over-all position of the contractor in dealing with the Government. In the statutory renegotiation of a contractor's prices, attention was given to his whole Government business at one time. Accordingly, it seemed desirable that a combination of procurement and renegotiation personnel should review a contractor's entire government business and then negotiate with the company for the adoption of over-all pricing practice consistent with War Department policies. As a result, a program of company pricing was initiated. Arrangements were made for participation in this program by the Navy Department as well as other government purchasing agencies. At the outset the program was applied on an experimental basis to especially selected contractors. In a short time it became clear that the system produced results of substantial advantage to the Government. One benefit gained was the opportunity to deal directly with subcontract prices. As a result of the company pricing program one large contractor holding over one billion dollars of war contracts modified his pricing policies, with a resulting reduction equivalent to 15 percent of the cost of his War Department contracts. At the end of the year it was determined to broaden the program and to make it permanent.

Indexes of price changes for military goods and services from 1 January 1942 to date were developed during the year. The major objec-

CHART 25
DECREASE IN CONTRACT PRICE INDEXES
FROM 30 JUNE 1943 TO 30 JUNE 1944



tives of these monthly indexes were to provide essential information for intensive analysis before making contract awards and to portray price movements in individual services and for groups of commodities. These indexes were descriptions of movements and not gauges of price reasonableness. Price indexes disclosed the extent to which pricing methods were effective and pointed to the need for correction of specific difficulties. Continuous studies of comparative prices and price movements were also made.

During the fiscal year 1944 the price index for all procurement by the Army Service Forces declined 6.4 percent. The downward trend is shown in the accompanying chart. The greatest decline during the year was experienced by the Medical Department whose price index declined 3.3 percent; the Ordnance price index declined 8.5 percent; the Signal Corps, 7.7 percent. A fractional decline only occurred in Quartermaster Corps procurement and in Transportation Corps procurement.

The average price of small arms declined 17 percent during the year. The average price on artillery declined by 18 percent. The cost of 4.5-inch guns was slashed 50 percent. On the other hand the general cost of automotive equipment increased 1.3 percent during the year. ASF headquarters also reported price trends in procurement activities of the Army Air Forces for the use of the Under Secretary of War.

An over-all decrease in prices of 6.4 percent was equivalent to a savings of more than one billion dollars on contracts awarded in the fiscal year ending June 30, 1944.

Relations with the Office of Price Administration

Except for minor adjustments, approximately 62 percent of the value of all War Department contracts agreed upon by the Under Secretary of War and the Price Administrator in September 1942 continued to be exempt from OPA price control. Regulations and changes in price ceilings issued by the OPA during the year were reviewed by the War Department in advance and all possible adjustments were made before publication. Some 85 individual War Department suppliers encountered major price difficulties under OPA regulations. ASF headquarters assisted these suppliers in obtaining relief from the OPA through exemptions from price control, through increases in maximum prices, and through other methods.

During the year ASF headquarters continued its rationing activities in cooperation with the OPA. Rationing operations at Army posts throughout the United States affecting civilian employees and military personnel off duty were handled on delegated authority from the OPA. To cut down unnecessary consumption of petroleum products by the War Department and by military personnel for their personal use, gasoline and fuel oil rationing were put under more effective control. Because of the shortage of leather, the War Department limited the purchase of new shoes by military personnel to two pairs a year.

Curtailed production quotas for such items as candy, soft drinks, and ice cream made it difficult for Army posts to obtain these items for consumption within the United States. Manufacturers preferred to continue selling their reduced quantities through regular business channels. A new rationing plan was therefore worked out with the OPA which made sales of these products to the Army exempt from

production quotas, and the Army was permitted to replace ration point values of the rationed ingredients.

All mutual problems of price control and rationing were settled by the War Department and the Office of Price Administration without any difficulty during the year.

Smaller War Plants

The Army Service Forces increased its efforts during the year to carry out the intent and purposes of the Smaller War Plants Act. In July 1943 a simplified and decentralized procedure for mutual action was developed by the Army Service Forces and presented to the Smaller War Plants Corporation. Preliminary conferences resulted in a tentative agreement in August. Thereafter a turnover in the management of the corporation delayed further action. Finally a mutual satisfactory procedural arrangement was formalized on 21 April 1944 in an agreement signed by the Under Secretary of War and the Chairman of the Smaller War Plants Corporation. Procurement regulations governing the new procedures were issued in May.

During the period between July 1943 and April 1944 various points in the simplified procedure were introduced by the procurement district offices of the technical services so that the eventual agreement was in large part a ratification of existing practice. A smaller war plants officer was designated in each contracting office to foster the use of small plants in war production. Working closely with the representative of the Smaller War Plants Corporation assigned to each procurement district office, the smaller war plants officer in the ASF was responsible for insuring that the interests of small plants were adequately considered. The requirements of placing contracts with suitable small plants to the extent practicable was an increasingly important factor in the choice of firms. At the same time increasing pressure was placed upon prime contractors to award subcontracts to small concerns.

The volume and percentage of prime contracts placed with small plants during the 12 months ending 30 June 1944 is shown in the accompanying chart. For the year as a whole 62.1 percent of all contracts placed were awarded to companies employing 500 wage earners or less. By dollar volume these plants held 22.3 percent of contracts.

Special studies were made during the year to determine the extent to which technical services were placing contracts with small plants. There were certain types of procurement which obviously could not be provided by small plants such as tanks, locomotives, tractors, and heavy ordnance items. When these items were eliminated, a study in April 1944 indicated that 74.8 percent of the dollar value of all suitable procurement was awarded to small war plants. The Quartermaster Corps in particular, purchasing a wide variety of miscellaneous general supplies, awarded during the year 68 percent of its contracts and 51 percent of its business on a dollar basis to companies employing under 500 workers.

Special Purchasing Problems

War Department procurement of lumber became increasingly difficult during the year. In part this situation arose from the labor short-

age in forests and mills, but a contributing factor was the purchasing procedure of the War Department. All technical services purchased lumber to use for different purposes, such as packing and crating. Inadequate knowledge of lumber terminology and practices by procuring personnel, many small orders and diverse shipping orders, and slow payment of invoices were all creating friction between lumber producers and the War Department. In order to eliminate these difficulties and to establish a close buyer-seller relationship, all procurement of lumber was centralized in the Corps of Engineers. Other services presented their requirement to the Engineer Corps, which in turn directed shipment to appropriate installations. At the same time a careful screening of all lumber requirements was introduced in order to reduce the quantities purchased as far as possible.

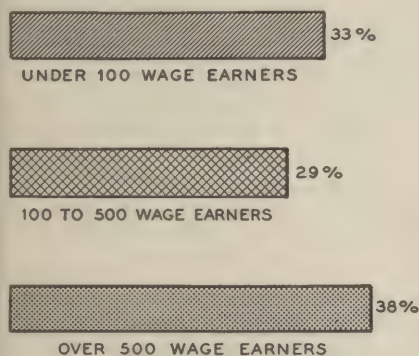
CHART 26

ASF PRIME CONTRACTS

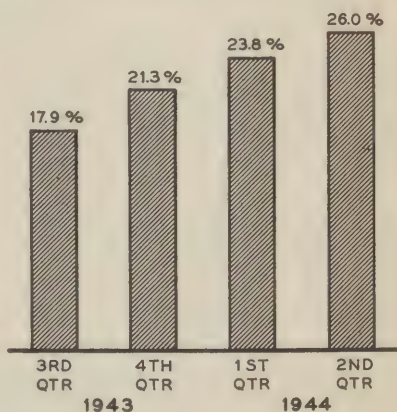
AWARDED TO SMALL MANUFACTURERS

1 JULY 1943 - 1 JULY 1944

DISTRIBUTION OF
CONTRACTS AWARDED
BY SIZE OF MANUFACTURER



PERCENT OF CONTRACT VALUE
AWARDED TO MANUFACTURERS EMPLOYING
500 WAGE EARNERS OR LESS



In May 1944 many corn processors supplying war contracts faced shutdowns because of a corn shortage on the market. Corn or corn by-products were used in the manufacture of 52 different high-priority items of Army supply including insecticides, explosives, pharmaceutical and biological items, waterproofing materials, containers, and metallurgical raw materials. Since the withholding of corn from the market threatened vital war programs, ASF headquarters, under the direction of the Secretary of War, worked with the War Food Administration and the Department of Agriculture in correcting the situation. Sufficient corn was found stored in 125 counties in Iowa, Illinois, Indiana, Nebraska, and Minnesota. Direct appeals were made to farmers to bring stored corn to market. Representatives of the Army

Service Forces together with representatives of the Department of Agriculture held district and county meetings with farmers and obtained marketing pledges which resulted in an immediate flow of corn to processors. In all, 68 million bushels of corn were obtained and the shortage was entirely relieved.

Training Contracts

The direction of all contracting functions for training was transferred to the Purchases Division in ASF Headquarters on 1 February 1944. These included contracts for the Army Specialized Training program, the Army Specialized Training Reserve program, and contracts for special school facilities. All contracts to 30 June 1944 except for medical, dental, and veterinary instruction were written on a budgeted cost basis with provision for review of rates to reflect the actual cost incurred by the institution. Contracts for the training of medical, dental, and veterinary personnel were negotiated on a tuition basis.

With the curtailment of the Army Specialized Training program, five auditing teams were dispatched by ASF Headquarters in March to examine the books of contracting institutions whose programs were reduced. This audit continued with satisfactory progress until the middle of May, when further activity was transferred to the commanding generals of various service commands operating under the staff supervision of the Fiscal Director. The remaining problems were those of formulating policy for the termination of training contracts and the establishment of procedures for disposal of training property. The Joint Army-Navy Board for training unit contracts continued to provide a medium for developing consistent policies between the Navy, the Air Forces, and the Army Service Forces in contracting for training services and for preserving the goodwill of the contracting institutions.

On 30 June 1944, 189 separate training contracts had been terminated by the Army Service Forces. Final termination agreements had been completed for all but 76.

Miscellaneous Problems

The many different problems confronting War Department contractors increased in complexity during the fiscal year 1944. These included labor costs, materials costs, cut-backs in some and expansion in other war programs, renegotiation of contracts, and price analysis. It seemed clear, therefore, that War Department policies and thinking should be fully understood by industry and at the same time that industry problems should be fully understood by the War Department. A basis for wholehearted cooperation by both sides was indispensable. Accordingly, a program of industry meetings was begun at which representatives of major industries sat down with representatives of the Army Service Forces for a discussion of mutual problems. By the end of the year seven such meetings had been held, with the rubber, worsted and woolen, radio, electronics, and cotton textile industries and with the National Electric Manufacturers' Association, the Automotive Council for War Production, and the United States Chamber of Commerce. These meetings proved of great benefit to the war effort.

The progress of the war and shifts in procurement programs made it necessary during the year to shorten the period of forward commitments for supplies and matériel. Procurement regulations were amended to provide a new policy on placing contracts and scheduling deliveries. Early in the war program, procuring agencies were encouraged to place contracts at the earliest possible time and to require contractors to commence production or to place sub-contracts immediately. That policy was desirable as long as Army procurement was directed primarily to provide initial equipment for the Army of the United States and for the United Nations. With procurement designed primarily to meet replacement and operational requirements, it was still important to assure deliveries in the necessary quantities on time. But subject to this need it was advisable to restrict contract commitments to the practicable minimum both in quantity and in time, and to use contract forms providing for maximum flexibility in production rates. These changes were essential to avoid surpluses and costly cancellation charges. At the same time deliveries had to be scheduled to correspond closely with actual requirements. Such close scheduling prevented the building up of surpluses and promoted the efficient use of available industrial capacity. When manufacturers were required to produce and deliver items before their actual need, they were forced to employ a peak number of workers who later had to be released. Scarce materials were also tied up in inventories. Each technical service gave careful attention to scheduling deliveries to synchronize with requirements.

Particular attention was given during the year to reviewing local purchases at all Army installations in the United States. When a post resorted to the local market to obtain necessary supplies, its procurement impinged upon supplies intended for civilian consumption as allocated by the War Production Board. The problem of local purchasing became particularly acute in the field of automotive spare parts. Many posts requiring spare parts to repair automotive vehicles purchased items from automotive suppliers in the vicinity rather than submit requisitions to ordnance depots. For this reason an order was issued in April 1944 restricting the use of Ordnance funds for local procurement to \$10,000 in any 1 month and requiring that no single purchase amounting to more than \$500 might be made without prior approval of ASF headquarters. Additional policies and procedures to reduce local procurement were being prepared at the end of the fiscal year.

The demand for beverages in overseas theaters for consumption by American soldiers expanded to such an extent that it was very difficult to find transportation facilities to ship soft drinks. Since bottled syrups required much less shipping space than regular containers, arrangements were made for various soft drink producers to set up overseas operations and manufacture drinks locally.

RENEGOTIATION

During the fiscal year ending 30 June 1943 the renegotiation of war contracts was in the pioneering stage. Basic principles, policies, and procedures were being established and personnel was being recruited and indoctrinated. By 1 July 1943 only 2,894 cases had been

completed by the War Department, a little less than 15 percent of all the cases for 1942.

Thereafter the work of renegotiating contracts to eliminate excessive profits gathered momentum. By 1 January 1944 some 13,994 cases had been taken up and more than 25,000 other cases had been screened out by the Renegotiation Division in Army Service Forces Headquarters. This progress was made in spite of the fact that the renegotiation law was under a continual barrage of criticism and in spite of the uncertainty created by three sweeping investigations by Congressional committees.

The volume of renegotiation was substantial. The 1942 war business of 60,000 contractors was examined. Of this total a substantial number was eliminated from further consideration by the Renegotiation Division. Another 20,328 contractors were assigned to the War Department for renegotiation, of which 17,046 were handled by the Army Service Forces. The division of these cases among the various technical services is shown in the following table:

Ordnance Department.....	4,292
Corps of Engineers.....	6,041
Quartermaster Corps.....	4,634
Signal Corps.....	658
Medical Department.....	428
Chemical Warfare Service.....	288
Transportation Corps.....	160
WD Price Adjustment Board.....	545

Of these cases, 97 percent had been completed by 30 June 1944.

The cases of contractors assigned for renegotiation were disposed of in either of two ways:

a. By an informal cancellation or a formal clearance agreement where examination disclosed no excessive profits; or

b. By a determination of excessive profits reached by a bilateral settlement agreement or by a unilateral order from the Under Secretary of War.

On 1943 business a total of 17,594 contractors was assigned for renegotiation throughout the Army Service Forces. By 30 June 1944 44 percent of these cases was completed, although a substantial proportion of these completions were cancellations or clearances.

Renegotiation by the price adjustment sections of the War Department through 30 June 1944 had resulted in direct refunds to the Government by supply and service contractors aggregating \$2,277,552,000. Of this sum \$1,648,651,000 was realized from renegotiation conducted by the Army Service Forces, of which \$1,430,720,000 was on account of 1941 and 1942 business and \$217,931,000 was on 1943 business. These figures did not include price reductions in existing contracts reported by the contracting officers, a saving in war procurement costs in great measure attributable to the pressure which the renegotiation statute placed upon pricing. It is estimated that such price reductions exceed the actual cash recoveries.

Probably the greatest benefit arising in war procurement because of the Renegotiation Act and its administration was lower prices on future contracts. The administration of the Renegotiation Act not only removed any advantage which a contractor might have obtained

through refusing to make proper price adjustments, but also made it actually disadvantageous to continue excessive pricing.

The general objectives in renegotiation were to eliminate profits found to be excessive after careful consideration of the circumstances in the contractor's case; to maintain or provide a substitute for competitive pressure on prices and costs; to induce reductions in prices and costs; to reward efficiency and stimulate production; and to encourage prompt adjustment to a reasonable price basis when experience indicated that the original price basis was unreasonably high.

While the renegotiation act contemplated the elimination of excessive profits in war production, it was not intended to reduce profits to the narrowest possible margin. It was the aim in every case to allow the contractor to retain a profit, computed before Federal taxes on income, in an amount which represented reasonable compensation for war production in the light of the contractor's peacetime experience, expanded volume of production, efficiency, invested capital, risks assumed, and other factors involved in his contribution to the prosecution of the war.

During 1944 an intensive effort was made more closely to correlate the policies and activities of the agencies interested in renegotiation. In August 1943 the War Department issued a manual for renegotiation, in loose-leaf form, for internal use. Other agencies outside the War Department informally adopted and made use of this manual. The informal liaison previously maintained among the various agencies was formalized in September 1943 by the creation administratively of a Joint Price Adjustment Board composed of the chairman of the price adjustment boards in the interested governmental agencies. Counsel for the War Department Board served also as counsel for this joint board. On 27 January 1944 the joint board issued a loose-leaf manual applicable to fiscal years ending before 1 July 1943, and at the same time the War Department issued a new loose-leaf manual for internal use which conformed to the manual which had been adopted by the board.

The organization for renegotiation decentralized renegotiation work; the War Department Price Adjustment Board in Washington functioned primarily as a staff agency. Each technical service in the Army Service Forces had its renegotiation organization. In the Ordnance Department local price adjustment boards, composed mainly of civilian personnel, operated in each of the 13 procurement district offices. Under each of these boards a price adjustment section handled the actual renegotiation, while the local board reviewed and approved agreements and handled impasse cases. Likewise, in the Corps of Engineers, the Quartermaster Corps, the Signal Corps and the Office of the Surgeon General local boards in procurement district offices handled renegotiation activities. In the remaining technical services central offices conducted renegotiation directly with the contractors.

Army Service Forces Headquarters assigned renegotiation cases to the technical services in such a manner that a contractor dealt with only one renegotiation agency. Consequently, there was no overlap in renegotiation procedure. Contractors were assigned to an agency for renegotiation on the basis of the preponderance of his dollar volume of business.

The Renegotiation Division in the Army Service Forces Headquarters handled directly some of the larger and more complicated cases; arranged for the assignment of cases; formulated principles, policies, procedures, and interpretations on business done in fiscal years ending before 1 July 1943; maintained progress records, not only for the War Department but for the other five governmental agencies administering renegotiation; and handled impasse cases (in which no mutual agreement could be reached with the contractor) which came up to the division from the technical services. More than 50 percent of these impasse cases were settled by the division by mutual agreement with the contractors. The remainder were sent to the Under Secretary of War for a unilateral determination. By the close of the fiscal year 1944, the division had handled 505 impasse cases, of which 217 were settled by agreement and 168 were determined unilaterally by the Office of the Under Secretary. The remainder were still in process of negotiation at the end of the fiscal year.

The chief of each technical service had authority to execute final renegotiation agreements with contractors whose total sales did not exceed \$10,000,000 for the fiscal year under review. All other agreements were reviewed by the Renegotiation Division in ASF Headquarters. During 1944 considerable attention was given to obtaining uniformity of approach and procedure in renegotiation by the various technical services and the Army Air Forces. Four regional meetings were held in February and March of 1944 acquainting renegotiation personnel with policies and procedures.

The Revenue Act of 1943, which became law on 25 February 1944, revised the 1942 renegotiation law. This new act applied to business done in fiscal years ending after 30 June 1943. Under it all renegotiation authority was vested in the War Contracts Price Adjustment Board, an interdepartmental agency created by the act. While in the majority of cases the actual conduct of renegotiation was delegated to the contracting agencies, the board retained the power to determine renegotiation policies. The Chairman of the War Department Price Adjustment Board represented the War Department in this new agency. The War Contracts Price Adjustment Board was in full operation by the end of the fiscal year 1944.

The new act made unilateral determinations of excessive profits subject to a redetermination by the Tax Court of the United States. It vested the repricing power on future deliveries under War Department contracts in the Secretary of War and separated this power from renegotiation activities. Contractors with war contract sales under \$500,000 were exempted from renegotiation. Finally, the 1943 law limited renegotiation to business done up to 31 December 1944, or 6 months later upon proclamation of the President. In general, the new law followed rather closely the concept and scope of the 1942 law, retaining, strengthening or clarifying the renegotiation procedures and the methods of determining excessive profits.

Renegotiation regulations, applicable to fiscal years closing after 30 June 1943, interpreting and applying the new act, were published on 24 March 1944 by the War Contracts Price Adjustment Board. At the same time a manual, for internal use, was issued by the War Department governing procedures under the new legislation.

No steps were taken during the fiscal year to prepare for the termination of renegotiation activity by the ASF, since there was a substantial volume of work to be done during the fiscal year 1945. The renegotiation sections in the Army Service Forces, however, emphasized cooperation between renegotiation personnel and contracting officers in obtaining closer forward pricing and in the settlement of terminated contracts.

Food

The procurement of foodstuffs for Army use presented no unusual problems during the fiscal year 1944. Continuing emphasis was placed upon adequate food of proper quality and nutritive value, upon procurement as close to the producer as possible, and upon minimizing the impact of Army procurement upon civilian supplies. Careful attention was given to the calculation of food requirements, which were presented 1 year in advance to the War Food Administration. The Quartermaster General included in his requirements approximately 80 percent of the food needs of the Navy, the Marine Corps, and the Coast Guard. All requirements from various governmental agencies were screened and reviewed by the Requirements and Allocations Committee on which the Quartermaster General was a member. When available supply of any particular commodity was insufficient to make requirements, the Quartermaster General reduced the demands of the armed forces. The major curtailment required during the year in food purchases was for butter. The regular daily butter allowance for soldiers since 1932 had remained at 2 ounces per day. In October 1943 this was reduced to 1.12 ounces per man.

Larger quantities of fresh foods were procured during the past fiscal year as available cold-storage facilities increased, particularly for overseas transportation. The ration for troops in the United States during the year contained of approximately 70 percent of perishable subsistence such as fresh and frozen meats, dairy products, fresh fruits, fresh and frozen vegetables, eggs, and similar items. The construction of refrigerator facilities in overseas theaters and enlarged refrigerator space in cargo vessels permitted the Quartermaster General to ship greatly increased quantities of fresh foods overseas. Reports coming from Italy indicated, for example, that fresh foods were being served in 1944 to troops immediately behind the battle line.

Perishable subsistence continued to be purchased by 35 market centers scattered throughout the United States. These market centers served posts, camps, and stations within their vicinity. Field buying offices were set up near principal marketing areas and were moved from time to time as production seasons and areas changed. The establishment of these field buying offices materially improved the procurement and distribution of seasonable fruits and vegetables. Total procurement by market centers in the fiscal year 1944 was some 65 percent greater than in the fiscal year 1943, amounting to a billion and a quarter dollars out of some three billion dollars spent on the entire food program.

During the year the market center system was divided for supervisory purposes into four regions. By assigning a director to each of these regions, closer integration of purchasing activities was achieved and the entire system was more effectively directed from

field headquarters in Chicago. Procurement schedule programs for market centers were set up in the fiscal year 1943 and were extended in use during 1944. These schedules guided centers in purchasing fresh meats, vegetables, and dairy products so that adequate supplies would be available during periods of low seasonal production.

The Quartermaster Corps did not out-bid civilian purchasers of fresh foods in the open market. Nor were dealers required to sell to the War Department at prices under those paid by civilian buyers. Market centers bought those food supplies which were available to them and prevented competition between Army posts in the area.

The dehydration program expanded during the fiscal year 1944. Of the 175 dehydration plants approved prior to 1 July 1943, 90 percent were complete by the end of the fiscal year and were producing on Government contracts. Technological improvements in processing and packaging savings expanded output. Approximately 114 million pounds of dehydrated fruits and vegetables were produced for the Quartermaster Corps during the year ending 30 June, 1944. With the exception of facilities for dehydrating cabbage and beets, plant capacity was adequate to produce all the dehydrated foods required by the Army. The plants were regularly inspected by the Quartermaster General and by the War Food Administration. These field supervisors assisted the plants in standardizing their operations and in improving peeling and blanching operations.

Technological developments resulted in the sulphiting of cabbage, carrots, sweetpotatoes, and precooked shredded white potatoes. Together with a lowering of the moisture content, this development improved the color of the food, increased the retention of ascorbic-acid content, and prolonged the storage life of dehydrated foods. During the year dehydrated root crops were manufactured in the form of cubes or half cubes, which saved packaging requirements and shipping space. Dehydrated onions were procured in the form of compressed 1-pound blocks, 24 of which were individually packed in shell containers and hermetically sealed in 5-gallon metal cans. Over 60 percent of dehydrated cranberries procured during the year were compressed. Other improved packaging techniques increased the quantities of dehydrated foods placed in standard containers.

The Food Composition Committee of the National Research Council and other research agencies were supplied with dehydrated products by the Quartermaster General during the year for experimental purposes.

In 1944 the Quartermaster General developed and set up food composition tables in cooperation with the National Research Council for the new components of field and special rations. These tables entailed the evaluation and compilation of analytical data from many sources. Complete details on the nutritive value of all foods were collected. Beginning on 1 January 1944, the complete nutritive value of all rations was calculated for the first time.

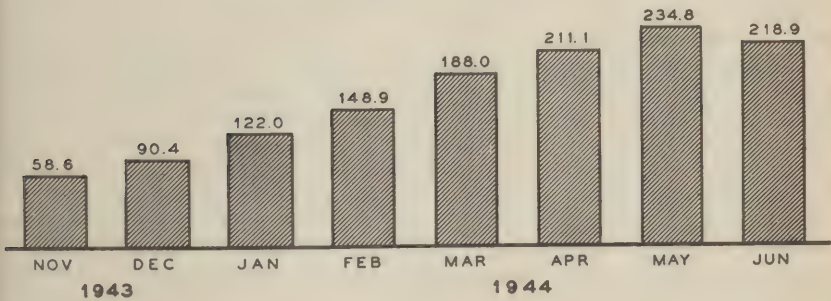
The Quartermaster General determined basic emergency rations for civilian feeding in liberated areas. In establishing these rations careful research had to be made into the food habits of various countries. Rations were developed which would meet the minimum nutritional requirements of the population. These rations were approved by the War Department and by the Food and Nutrition Board of the National

Research Council. Studies were also made of possible sources of supply for the food required in civilian feeding overseas. The quantities approved for supply by the United States were procured by the Quartermaster General.

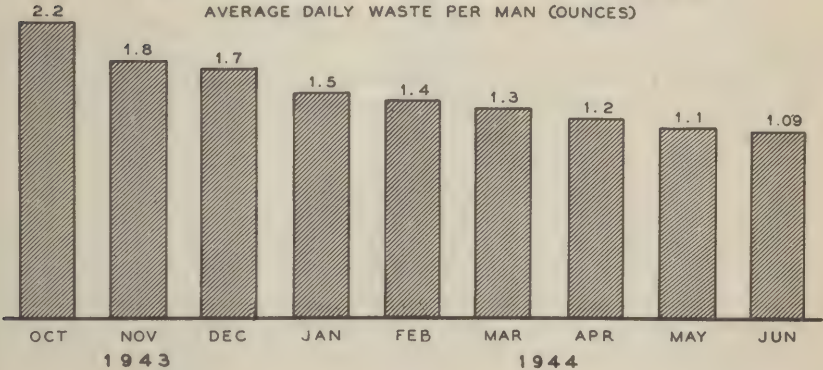
The Food Service Program

During the fiscal year 1943 the Army inaugurated a food-conservation program by changing the basis for calculating food requirements and by impressing upon each soldier the importance of not wasting food. On 3 July 1943 ASF Circular No. 45 established a Food Service Program for coordinating all food service activities including supervision of messes, food conservation, food preparation, mess management, and training of mess supervisors, cooks, and bakers. These activities were directed by the Quartermaster General and carried out through service commands. A food service supervisor was designated at each major post in the United States. A food service conference inaugurating the new coordinated program was held at Chicago in August 1943.

CHART 27
SAVING IN ASF SUPERVISED MESSES
FROM FOOD SERVICE PROGRAM
(THOUSANDS OF DOLLARS)



REDUCTION IN FOOD WASTAGE
AVERAGE DAILY WASTE PER MAN (OUNCES)



The first major project of the program was an intensification of the campaign to reduce food waste. An officer or noncommissioned officer stood at the plate-scraping point at each mess hall to question and caution men who wasted food. Kitchen waste was greatly reduced by the introduction of the cook's work sheet which recorded left-overs and wasted food. The results of this campaign were a steady decline in the amount of food wastage each month. In poundage enough food was saved in 1944 to feed three infantry divisions.

The next project was a campaign to educate cooks in proper methods of utilizing fats obtained from carcass and other meat issued to messes. June purchases of shortening were only 50 percent of the per capita purchases in July 1943. The balance was supplied from kitchen-rendered fats.

Finally, while the conservation of food and the reduction of waste were highly important, the primary objective of the food service program was to insure that every soldier was provided an adequate diet of well-cooked and attractively served food. This was attained through better supervision and education of cooks. A survey of military personnel on duty in messes disclosed that 42 cooks and 38 sergeants out of every 100 had not been trained. The annual turnover of mess personnel was over 75 percent.

In December 1943, a number of highly qualified civilians drawn from the hotel and restaurant business were assigned as consultants to help improve mess operations. In the Ninth Service Command these consultants were assigned, for example, to visit various posts and examine the local food service program. They helped post commanders to appreciate the magnitude of their subsistence activities. On a 20,000 man post, for example, the dollar volume of food consumed amounted to 4¼ million dollars per year. In weight this amounted to 37 million pounds. Food management was a big part of the job of the post commander of the Army Service Forces.

A new form was adopted during the year for the monthly master menu. This showed the ingredients required for the preparation of each dish and the total ingredients by meals according to nutritive content. The nutritive value of the menu was improved by careful calculation in its planning. The data made available in the master menu permitted local substitutions while retaining the over-all nutritional content.

The expansion of Army bakeries was halted during the year. On 30 June 1944 the 140 active bakeries numbered 5 less than those at the beginning of the year. Approximately 65 percent of all bread consumed by the Army of the United States was produced by these bakeries.

FUELS

During the fiscal year 1944 the Quartermaster General purchased over a billion gallons of gasoline for overseas military use. In addition some 50 million gallons of engine oil, 3 million gallons of gear lubricants, 45 million pounds of greases and 2 million gallons of other petroleum products were procured. Monthly purchases of 5-gallon cans averaged more than one million and of 55-gallon steel drums

more than 400,000. A conservation program resulted in reclaiming each month nearly the same number of 55-gallon drums.

Petroleum products for overseas shipment were stored by the petroleum industry. During the year 95 percent of all shipments out of ports of embarkation were made available from stock in industry storage areas. Only 5 percent was withdrawn from stock in government-owned depot storage.

The price paid for petroleum products did not exceed the OPA ceiling prices except in special instances where unusual deadlines in deliveries had to be met. These prices were then filed with OPA. The Quartermaster General maintained close relations with the Navy and the Army Air Forces so that any changes in prices paid by these agencies would be immediately reflected in purchases by the ASF.

In December 1943 the Quartermaster General was made responsible for the compilation of requirements and the purchase of all petroleum products needed by the Army exclusive of Army Air Forces. These requirements were included in the Army Supply Program and were presented also to the Army-Navy Petroleum Board. This board consolidated all requirements of the military forces for presentation to the Petroleum Administrator for War, who allocated the products of the industry. Within the United States petroleum requirements were purchased from local distributors of the petroleum industry. Data on consumption and supply on hand were provided monthly to the Office of the Quartermaster General. The Quartermaster General assigned personnel to assist other technical services in the Army Service Forces to develop their petroleum requirements and to screen demands with care. Supply and demand estimates of petroleum needs were projected 12 months ahead based upon probable military and economic developments. Estimates were also prepared of petroleum supplies necessary for the operation of civilian economy in occupied territories. Studies were made of possible military rehabilitation of oil fields and refineries captured by the enemy. Data about enemy oil supplies were also prepared and turned over to military planners.

An important development during the year was the standardization of a new all-purpose, all-weather gasoline designed to meet year-around requirements of all ground vehicles from jeeps to tanks. The effort to send different grades of gasoline overseas for use in different engines proved completely impractical. Before the fiscal year 1944 an all-purpose gasoline had been developed in two grades—a summer grade and a winter grade. In November 1943 a new all-weather product was made available which could be used in temperatures ranging from zero to extreme heat. The developmental work in establishing the specifications for this new gasoline was performed by the Chief of Ordnance. Acceptances of the specifications by the British, the Army-Navy Petroleum Board, the Petroleum Administrator for War, and the petroleum producers were negotiated by the Quartermaster General.

Some difficulty in procurement was encountered in December 1943, when refineries changed over to production of the new-type gasoline. At one time the ASF was substantially behind in its east coast shipments of gasoline. This situation was ended by 30 June 1944.

The Fuels and Lubricants Division in the Office of the Quartermaster General was instrumental in organizing a containers committee during the year which operated under the auspices of the Army-Navy Petro-

leum Board. This committee served as a clearing house for all information on requirements and supply of containers and drums for use by the armed forces. Shifts in supply were thus made possible to meet changing needs.

A catalog of all current specifications for liquid fuels, lubricants, and other petroleum products was prepared and published from time to time by the Quartermaster General. Another list was prepared of all petroleum products standardized for Army use. This list was a definite step toward the complete standardization of all Army petroleum products at an early date. Container sizes for standard products were also included in this list.

During 1944 a Nation-wide inspection system was inaugurated to insure that petroleum products purchased by the Quartermaster Corps were of the proper quality and were correctly packaged and marked. This was accomplished by arranging contracts with the three leading commercial petroleum inspection agencies for the complete inspection of all products purchased for overseas shipment. A representative cross-section of petroleum products supplied to posts, camps, and stations was also inspected to insure that these were of proper quality.

The Army's enormous need for petroleum led to the development of the Petroleum Products Laboratory which was utilized by all technical services in determining gasoline and lubricant requirements for various types of equipment. Mobile as well as base laboratories were utilized for testing and analyzing various products. A Quartermaster Petroleum School was established at the University of Tulsa during the year.

A collapsible gasoline container was developed in 1944 made in 4 sizes. These containers were canvas cells impregnated with synthetic rubber which were impervious to aromatic fuel. They could be used both for fixed and mobile storage. Some 2,900 of these containers were shipped overseas by the end of the year for quick storage of petroleum products at advance air bases. The Quartermaster General was also made responsible in January 1944 for the procurement of gasoline dispensing equipment. Two different types of drum plants were developed for procurement by the end of the year.

Canol Project

Operation of the 24-million-dollar oil refinery built at Whitehorse, Yukon Territory, Canada, was begun on 30 April 1944. An average of 3,000 barrels of crude oil per day were to be processed by this refinery, from which 1,018 barrels of motor gasoline, 525 barrels of fuel oil, and 479 barrels of aviation gasoline could be produced for the use of American forces in Alaska, Yukon, and British Columbia.

A system of pipeline distributions extending from Skagway to Whitehorse and from Watson Lake to Fairbanks along the highway was also completed during the year. This pipeline distributed gasoline refined at Whitehorse and gasoline delivered by barge to Skagway.

The Imperial Oil Co. agreed during the year to continue exploration of new oil fields in the Norman Wells area. The company also agreed to deliver for use by the United States for military purposes one-half of the oil in the Norman Wells field up to 30 million barrels and one-tenth of all new oil fields discovered in Northwest territories

until the reserves aggregated a total of 60 million barrels. The oil from the Norman Wells fields had two extraordinary characteristics—an extremely low pour point and an amazingly low water content. Laboratory tests showed that the oil was still fluid at 70 degrees below zero while other tests showed that there was .05 per cent water in the oil, a figure far below the average natural water content.

Solid Fuels

War Department Circular 319 on 8 December 1943 centralized under the Chief of Engineers the responsibility for determining requirements and for storing and issuing solid fuels used for utility purposes. Extensive efforts continued during the year to conserve coal requirements for heating purposes at posts. The productive capacity of coal mines in Alaska was increased 100 percent to meet military and civilian needs in that area, thus saving rail and water transportation of coal from the United States. The production of coal in North Africa was increased approximately 50 percent during the year while the production of coal in Sardinia increased 1,000 percent.

An active part was taken by the Army in increasing the production of coal in South Africa in order to relieve United States and United Kingdom sources. At the end of the year studies were under way to increase the production of coal in India. Assistance was also rendered the United Kingdom in increasing its coal production through greater mechanization in mines and by expansion of open pit mining operations.

A total of 10 million tons of coal was purchased by the Army Service Forces in the fiscal year 1944.

Chapter 9. PRODUCTION PROBLEMS

The changing nature of military requirements meant corresponding changes in production schedules.

Prior to the fiscal year 1944 steps had been taken to bring the procurement program of the ASF within the general limits of the war productive capacity of the United States. To this end, the general revisions in the Army Supply Program as of 1 August 1943, and as of 1 February 1944, as well as all proposed interim changes, were reviewed from the standpoint of overall production feasibility. In a limited number of cases procurement objectives were established lower than the computed military requirements because of limitations in the availability of materials or facilities. In other cases, acceptable alternative military programs were adopted as required by considerations of production feasibility. In still other cases, production in advance of needs was authorized where such production was considered warranted by the production problems involved. The effect of such modifications in procurement objectives, however, was relatively very minor when compared with the program as a whole. In the aggregate, production objectives closely approximated computed needs.

Cut-Back Procedure

Early in the fiscal year 1944 the Army Service Forces established the practice of holding weekly production meetings at which representatives of ASF headquarters, appropriate technical services, and the War Production Board were present. Prospective changes in military requirements were brought up at these meetings and possible repercussions on production schedules, raw materials supply, and labor supply were discussed. In this way it was possible for both military procurement authorities and the War Production Board to anticipate prospective changes and to prepare to meet them.

As reductions in certain programs became sizeable, it was necessary to establish definite procedures for curtailment in production schedules. The release of information about cut-backs was provided for by ASF Circular No. 129, issued on 24 November 1943. Procurement offices in the field were directed to notify the regional office of the War Manpower Commission when a cut-back was made and to transmit a copy of the notification to the Washington office of the technical service. When the procurement officer had knowledge about the contractors, subcontractors, and suppliers who would be substantially affected, he provided this information likewise to the War Manpower Commission regional office. The procurement officer also informed the WMC regional office of his own opinion about where workers might be reemployed advantageously to the war effort. On large-scale curtailment of production schedules, the War Department issued an official statement.

On 22 December 1943, each of the technical services of the Army Service Forces was instructed to establish a board of review to determine which contracts and production schedules were to be reduced or terminated when required production was reduced. An ASF Headquarters Board of Review was also established, consisting of the Director of the Production Division as chairman, the Director of the Requirements Division, the Director of the Readjustment Division, the Director of the Industrial Personnel Division, and the Director of Industrial Demobilization, to review and coordinate the actions of the technical service boards.

ASF Circular 146 issued on 19 May 1944, further developed cut-back procedure to comply with provisions embodied in War Department procurement regulation No. 15. These instructions provided that wherever possible curtailments in production schedules would be made in plants located in group I or group II labor areas as classified by the War Manpower Commission. In making curtailments, special consideration was to be given to the position of smaller war plants. Large contractors were to be urged to cut their subcontracting volume to smaller war plants by an amount no greater proportionately than their own reductions. As large a proportion of curtailment as was consistent with cost and future requirements was to be made in Government-owned facilities. An exception was made for cases involving cut-backs in production schedules for private facilities which were having difficulty in meeting their schedules.

Each technical service was instructed to maintain records showing the procedures used and the decisions made in each case of production curtailment. When a cut-back was determined upon, prompt notice was given to the contractor whose production was substantially decreased. This notice included a detailed statement of the reasons why the curtailment was necessary. This explanation in turn was passed on to workers, union representatives, subcontractors, and suppliers by the prime contractor. War Department procurement officers urged contractors to cooperate with the War Manpower Commission in locating other employment for released workers.

Whenever a cut-back in an individual plant caused a net reduction of more than \$200,000 in the total value of deliveries scheduled for the next 3 months, this information was provided the War Production Board and its regional offices, the War Manpower Commission and its regional offices, as well as interested War Department agencies. Copies of an official statement were distributed at least 2 days prior to the actual order directing a cut-back.

ASF Circular 146 provided that boards of review in technical services would consist of not less than three officers with the rank of lieutenant colonel or higher who had a knowledge of production and procurement programs. Each curtailment in production involving a reduction of more than \$3,000,000 in the total value of deliveries scheduled for the next 3 months was handled by a technical service board of review. Chiefs of technical services might make such additional use of its board as it desired. In turn, the ASF Board of Review gave additional consideration to each curtailment handled by a technical service board of review. Whenever chiefs of technical services so desired, other cases might be referred to the ASF Board of Review.

CHART 28

ADJUSTMENT OF PRODUCTION "CUT-BACKS"

STATEMENTS
ARE SENT TO:



SELECTIVE SERVICE



WAR PRODUCTION
BOARD



WAR MANPOWER
COMMISSION



WAR DEPARTMENT
SPECIAL STAFF



BUREAU OF PUBLIC
RELATIONS



DIRECTOR OF
INDUSTRIAL
PERSONNEL

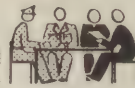


DIRECTOR OF
MATERIEL

TO WEEKLY MEETINGS
SEND REPRESENTATIVES



HEADQUARTERS, ASF,
ANNOUNCES THAT A
CHANGE HAS BEEN
MADE IN THE ARMY
SUPPLY PROGRAM.



WEEKLY MEETINGS ARE
HELD TO DISCUSS AD-
VANCE INFORMATION.



THE APPROPRIATE
TECHNICAL SERVICE
IS NOTIFIED.



THE CHIEF OF THE
TECHNICAL SERVICE
NOTIFIES THE DISTRICT
PROCUREMENT OFFICER.

THE DISTRICT PRO-
CUREMENT OFFICER
RELEASES STATEMENT
TO THE PRESS.



THE DISTRICT PROCURE-
MENT OFFICER NOTI-
FIES THE PLANT.

THE PLANT
NOTIFIES
EMPLOYEES.



THE PLANT
NOTIFIES THE
LOCAL UNION
REPRESENT-
ATIVE.



THE PLANT NOTIFIES
THE SUB-CONTRACTOR.

THE SUB-
CONTRACTOR
NOTIFIES
EMPLOYEES.



THE SUB-CON-
TRACTOR NO-
TIFIES THE
LOCAL UNION
REPRESENT-
ATIVE.



The cut-back procedure of the Army Service Forces had to be altered on 16 June 1944, in order to give effect to directives issued by the Director of War Mobilization in the Executive Office of the President. The Director of War Mobilization instructed the Executive Vice Chairman of the War Production Board to establish procedures for clearing contract cut-backs and terminations and to adopt uniform policies providing reasonable notice to management and labor about such cut-backs. In a letter to the Secretary of War on 5 June 1944, the Director of War Mobilization informed the Secretary of War that procurement agencies would take prompt action to clear their proposed contract cut-backs and terminations with the War Production Board.

Subsequently the Production Executive Committee of the WPB organized a working staff to review cut-backs of delivery schedules involving a reduction of \$1,000,000 or more in the total volume of items to be delivered in the current month or in any one of the succeeding 6 months under all prime contracts for that procurement item. Special forms were set up for providing preliminary notice of a contemplated cut-back, for detailed advice of cut-backs, and for the notification of termination of delivery schedules. This last form was filled out when any one contract during the current or succeeding 3 months was reduced by \$200,000 or more. Copies of the forms were submitted to the War Production Board and its regional offices, the War Manpower Commission and its regional offices, and interested War Department agencies. The new procedures became effective on 15 June 1944.

The only substantial change in Army Service Forces procedures introduced by the instructions of the Director of War Mobilization was the clearance of proposed cut-backs by the Army Service Forces with the War Production Board. Otherwise procedures already in existence for some 6 months were continued without change in broad outline.

The major objective in cut-back procedure was to keep facilities and labor employed on vital war production. Since over-all procurement goals were not reduced during the fiscal year 1944, and were not likely to be reduced substantially in the fiscal year 1945 unless the war in Europe was won, reductions in particular types of production were accompanied by increases in other types. As far as possible these adjustments were made in such a way as to maintain total output.

For example, two ordnance plants producing small arms were switched to rubber tire output. Decreases in tank production made facilities available for the manufacture of locomotives and locomotive cranes. Other plants released from light ordnance production were used to step up the output of heavy artillery. An ordnance plant at Lowell, Mass., was converted to the production of wire. Most facilities projects during the year were in reality a phase of switching productive effort from one type of war equipment to another.

Some ordnance and some chemical plants were placed in standby condition during the year, so that they might resume output in case of additional need for their product.

New Facilities.

Careful control of authorizations for industrial facility expansion was continued during the fiscal year 1944. Prior to April 1944 pro-

jects sponsored by the technical services in the following classifications required approval by the Production Division, ASF:

a. Those involving machine tools and equipment only costing in excess of \$100,000.

b. Those involving either construction or expediting production funds, regardless of cost.

ASF Circular 78, issued in April 1944 required that all construction in excess of \$1,000 at class IV installations be approved by Headquarters, Army Service Forces. As a further control over industrial facility expansion, the Facilities Committee, War Production Board, approved all projects estimated to cost in excess of \$100,000. Prior to February 1944 this control was extended to all projects involving machine tools and equipment only in excess of \$100,000 and those involving construction in excess of \$10,000.

During the fiscal year 1944, a total of 447 projects for the expansion of industrial facilities were approved for the Army Service Forces. The total cost was estimated at \$822,912,925. In addition, a total of 308 Army Air Forces projects, amounting to \$334,000,000 were processed through the Production Division for allocation of expediting production funds by the Under Secretary of War.

A great majority of the facility projects for the year 1944 consisted of small additions to existing facilities designed to increase their efficiency or expand their output to meet schedules. In dollar value, the bulk of the program resulted from the expansion of a few specific procurement programs. New production facilities were authorized in order to produce certain newly standardized weapons. The very urgent demand for heavy trucks made it necessary to expand the facilities for the production of axles and transmissions. The need for additional spiral and field wire required expansion of production capacity to meet Signal Corps requirements. A substantial expansion was also necessary in the production of miniature tubes. Several increases in the production capacity of tractors were authorized, because of the increasing demands from overseas for this item of equipment. The productive capacity for the output of rockets was enlarged. By far the largest dollar volume of expansions resulted from the accelerated heavy artillery program, where facility expansions amounting to more than \$125,000,000 were authorized.

The increases in productive capacity approved during the fiscal year involved a relatively small amount of new construction. In most cases, existing buildings and facilities were found which could be repaired or renovated in order to house the new activity. The bulk of the year's facilities program was for procurement of machinery and equipment. Every effort was made to transfer equipment no longer needed in other phases of the program. The War Production Board was helpful in reducing the need for new machinery and equipment.

Under section 124 of the Internal Revenue Code, a contractor who acquired or constructed with his own funds facilities especially adapted for use in war production, might upon securing a necessity certificate amortize the cost over a 5-year period at the rate of 20 percent per year. The Tax Amortization Branch of the Army Service Forces continued during the year to handle these applications for necessity certificates. As of 1 July 1943 there were 3,335 applications pending. During the year 7,695 additional applications were received.

By the end of the year all but 80 of the backlog of these applications had been acted upon (all pending applications were disposed of by 19 July 1944). The estimated total value of facilities certified during the year was \$986,000,000.

Prior to 17 December 1943 the Secretary of War and the Secretary of the Navy were by statute authorized to act upon applications for necessity certificates. Under Executive Order No. 9406 dated 17 December 1943, this authority (except for certain pending applications) was transferred to the Chairman of the War Production Board for all future applications filed. After 17 December 1943 the Tax Amortization Branch in the ASF received from the War Production Board 1,013 requests for reports on applications for specific plant expansions filed with that agency. All but 74 of these cases had been reported on by the end of the fiscal year.

Raw Materials Control

The Controlled Materials Plan functioned satisfactorily during the fiscal year 1944. No particular difficulties were encountered in the preparation of estimated requirements for carbon steel, alloy steel, copper, and aluminum for presentation to the War Production Board, or in the method of distributing WPB allotments to War Department contractors. The Controlled Materials Plan became fully effective 1 July, 1943; the gradual extension of its operations over the preceding 6 months enabled procurement officers and contractors to prepare adequately to handle their responsibilities.

Materials requirements were presented to the War Production Board quarterly, approximately 2 months in advance of the quarter under determination. The estimates were subjected to careful scrutiny by industry and material divisions and the Program Bureau of the War Production Board. Allotments were less each time than the stated needs. No cut-backs in production schedules became necessary, however, because of a shortage of controlled materials. The actual allotments proved sufficient for two reasons. First, the cut-backs procurement programs and slippages in schedules after material requirements had been presented frequently reduced the total Army needs for controlled materials. In the second place, despite careful screening by technical services and by the Production Division, material requirements were usually overstated from 5 to 10 percent. In preparing bills of materials, manufacturers used rough stock weights which in some instances developed a somewhat larger need than actually proved to be necessary.

Quarterly computations were presented to the War Production Board for class B products whose producers received authority directly from the War Production Board to purchase controlled materials. After submission of the B product requirements for the first quarter of the calendar year 1944 the Army Service Forces suggested to the War Production Board that further estimates of this type were unnecessary. The War Production Board agreed and asked the ASF to provide general requirements data under four broad categories as the basis for planning production and facilities shifts. Thereafter the representatives of the Army Service Forces on industry divisions of the WPB reviewed estimates prepared in those divisions for class B products. In this way an opportunity was given

to the ASF to comment about either inadequate or excessive production of these items.

Controlled Materials Plan operations did not supplant the basic system of preference ratings which was first set up by the Office of Production Management early in 1941. The distribution of materials other than controlled materials and of component parts was still directed by preference rating.

The rating pattern adopted by the War Production Board in June 1942, continued in operation during the fiscal year 1944, with certain modifications. The number of ratings was extended to include six categories: AA-1; AA-2; AA-2X; AA-3; AA-4; AA-5. An emergency rating, AAA, was issued, as before, only on application to the War Production Board. The other ratings were assigned to contracts by ASF contracting officers. These assignments were made in accordance with instructions issued from time to time by the Army and Navy Munitions Board.

The practice was continued of making preference ratings apply to specific percentages of items as set forth in the Army Supply Program. For example, the AA-1 rating was authorized for assignment to 60 percent of the munitions program contained in section I of the Army Supply Program, with certain minor exceptions. The requirement that preference ratings granted by ASF contracting officers be reviewed by an official of the War Production Board was removed at the beginning of the fiscal year. Thereafter only preference ratings granted by the ASF for the purchase of machine tools and other capital equipment over \$500 in value and for use in the United States were approved by WPB field offices.

The priorities directive of 30 April 1943, governing the assignment of preference ratings by Army and Navy contracting officers was reviewed in September, and a proposed revision was submitted to the Joint Chiefs of Staff and the War Production Board. A revised priorities directive based upon WPB Program Determination No. 500 was published by the Army and Navy Munitions Board on 8 October 1943. This directive provided higher priority ratings for the radio and radar program and also for the ship conversion program of the Army.

Subsequently the priorities directive of 8 October 1943 was implemented under the direction of the Production Division either by reporting procedures or, alternatively, by the preparation of specific procurement programs by some technical services with the designation of the preference rating applicable to each sub-program therein. These programs were submitted to the War Production Board for approval. The appropriate preference ratings were then assigned by the various procurement offices.

The basic priority authority of the Army and Navy Munitions Board was restated by the War Production Board in WPB Directive 31 published on 25 March 1944. This directive confirmed the power of procurement officers to issue preference ratings. The principal change was a simplification in procedure permitting procurement officers to assign ratings on a purchase order or a contract instead of on a preference rating certificate provided by the WPB.

From time to time application was made to the WPB for higher ratings for particular procurement programs or for particular phases

of procurement programs. For example, an AA-1 rating was obtained from the War Production Board at the request of the Ordnance Department for facilities in the heavy truck, heavy artillery, and rocket programs. In the final quarter of the fiscal year 1944 the Army Service Forces initiated 1,644 applications for an uprating of specific procurement contracts. Of these, 1,381 were approved by the War Production Board having a total value of \$3,438,400,000.

The priorities instructions for procurement officers were revised during the fiscal year and issued on 1 October 1943, by the Army and Navy Munitions Board. These instructions replaced the original ones issued 18 February 1942. The new instructions established in a shortened, simplified form the correct procedure for the assignment of preference ratings.

These instructions were also published as War Department Procurement Regulation No. 16. It became evident during the year that some action was needed to inform posts, camps, and stations of the proper procedure in using preference ratings for the procurement of local supplies. Simplified instructions applicable to local procurement were prepared and distributed through the commanding generals of the service commands in December 1943.

In December 1943 the Army Service Forces requested the War Production Board to exempt military agencies from the provisions of CMP Regulation No. 5 establishing certain dollar quotas limiting a purchaser of maintenance, repair and operating supplies. The variation in size of both War Department industrial plants and command installations made observance of this regulation particularly complicated. The War Production Board granted a blanket exemption from the regulation to War Department agencies procuring maintenance, repair, and operating supplies.

The Production Division, through representation on the pertinent WPB committees, also participated in the disposition of requests by other government agencies for preference rating assistance.

In addition to the presentation of raw material requirements under the Controlled Materials Plan, the Army Service Forces prepared studies of demands for other materials and for component parts. These were submitted to the War Production Board through ASF representatives in the various industry divisions. Studies were made of requirements for mica, magnesium, potassium chlorate, lumber, hides and leather, freon, paper products, internal-combustion engines, engine generator sets, tire chains, and other products.

Production of Heavy Artillery and Heavy Artillery Ammunition

The increased requirements for heavy artillery pieces and heavy artillery ammunition placed a major production problem upon the Army Service Forces in the fiscal year 1944. At the end of March 1944, one arsenal was the sole producer of tubes for four heavy artillery pieces. This same arsenal and a private manufacturer produced tubes for the 155-mm. howitzer, while tubes for the 155-mm. gun were produced at the arsenal and by two private companies. In order to achieve the expanded program, new facilities were authorized for all types of weapons. The monthly maximum capacity, however, could not be reached until the end of 1944 or early 1945.

The War Production Board gave top priority rating to the Army Service Forces for both the heavy artillery and the heavy artillery ammunition programs. The major problem in realizing the necessary expansion was that of forging and machining equipment. This type of equipment was produced by only a few companies. New plants could be brought into the heavy artillery program only as rapidly as machinery was produced and installed. The requirements for heavy, quality steel for the ammunition program meant an increase in the deliveries by producers to War Department contractors by 450 percent. In order to realize this increase, the War Production Board had to modify certain existing steel facilities and to bring other facilities into high quality steel production.

The capacity of smokeless powder plants had to be increased 50 percent. Since current capacity was not being entirely used, all powder plants were directed to achieve full-capacity operations as soon as possible. The final expansion of capacity would require 12 to 18 months.

For the first half of 1944, 95 percent of the planned increase in weapons production was completed. Considerable difficulty, however, was experienced with the 155-mm. gun, production of which was only 62 percent of forecast. The failure to reach anticipated deliveries reflected labor difficulties and management problems in establishing new production lines. It was hoped that full 1944 production objectives for all weapons would be realized by 31 December. Production of spare tubes for the first 6 months was 112 percent of scheduled deliveries. An increase of another 34 percent was necessary, however, in order to meet the year's requirements. This could be realized only if labor supply was available for uninterrupted production.

In order to get ammunition to meet the immediate needs of combat troops overseas, the Army Service Forces followed production step by step. For one piece of ammunition, daily reports by telephone of shipments from shell producers were required. These shells were shipped by express to loading plants and all cars were traced through to destination. Loading in advance of shell testing was authorized in order to maintain continuous production on the loading lines. Express shipments were made directly from loading plants to the docks of ports of embarkation. Ammunition was also obtained from the Navy Department, and refused at an arsenal near the eastern seaboard. Twenty-four hours after the arrival of these shells from Navy arsenals, the ammunition was on its way to ports of embarkation.

In order to meet the needs for certain artillery battalions in France, an old-type shell without any modification was tested in June 1944 for use in a new heavy artillery weapon. Zones of fire for the shell were thus established, and large quantities shipped immediately to France. By the extraordinary efforts of expeditors, the planned production during June of the new-type shell was increased 30 percent. No feasible improvisation was overlooked in the effort to supply overseas needs in heavy ammunition.

Conservation and Product Control.

The fiscal year 1944 was marked by numerous shifts in the supply-demand relationship of many raw materials, components, and products needed for military supply. These changes resulted from many

causes, among which shortage of labor was a major one. Increased demands for some items made allocations control by the WPB essential while the supply of other materials became easier. For example, as many as 3,000 different chemicals were kept under constant observation.

The successful use of penicillin in military medicine brought about a considerable increase in the requirements for this drug. In July 1943 production of 762 million units was realized, compared with overall requirements of more than 250 billion units per month. An allocation order issued by the War Production Board on 16 July 1943, channeled all available supply to military use and to special civilian cases. By the end of the year military requirements were being met but product control had to be retained because the supply did not yet fill all demands.

The successful use of the new powder, DDT (Dichlordiphenyltrichlorethane), for controlling mosquitoes, lice, and other disease-bearing insects increased requirements. All production was put under allocation control by the War Production Board. From an output of 3,000 pounds per month industrial capacity was expanded to meet requirements in the neighborhood of 1,800,000 pounds per month for the Army and Navy. The development of a new material not previously manufactured in this country, polyethylene, required production control, since its demand as a wire and cable insulator far exceeded available supply. There were many other examples of products whose supply was kept under careful control because of military requirements.

On the other hand increased supplies eased the controls required over bismuth salts, vitamin factors, antimalarial drugs, calcium carbide, arsenic trioxide, and other drugs.

One of the most critical materials emerging during the year was lumber. A 20-percent loss of labor in the industry and inadequate distribution controls resulted in demands far exceeding supply. A reduction in the military use of lumber for ships, barges, and construction was more than offset by increased requirements for box, crate, and dunnage lumber. At the request of the War Department strict control was exercised over all orders shipped from lumber mills. By this measure Army requirements during the last 4 months of the fiscal year were met. At the end of the fiscal year the ASF and the WPB agreed upon a procedure for recording Army procurement of lumber beginning 1 August 1944. Under this system the ASF would be able to show its total procurement of lumber during any calendar quarter in relation to the actual quantity authorized for purchase by WPB program determinations.

The conservation activities of the Army Service Forces during the year varied with the supply status of materials and other production factors. Considerable effort was devoted to improving the utilization of scrap metal produced in forge and machine shops. Specifications for some Army items such as mess trays and field range parts were altered to permit producers of corrosion-resisting steels to utilize special-alloy steel scrap. Specifications for alloy steel used by the Army were changed to permit the use of triple alloy steels of the nickel-chromium-molybdenum type, which permitted utilization of mixed alloy steel scraps.

The increasingly critical supply of leather led to substitutions of treated fiber in such items as linemen's belts, knife sheaths, and telephone-carrying cases.

Previously determined conservation policies governing Army construction remained in effect throughout the year. Several revisions of the "List of Prohibited Items for Construction Work" issued by the Army and Navy Munitions Board were put into effect for War Department construction. These revisions tended to restrict further the use of lumber and certain other materials. On the other hand, the restrictions on the use of zinc and aluminum were eased.

The critical supply of Freon-12 led the ASF to issue a memorandum on 3 August 1943, providing that it might be used in new Army installations for noncomfort cooling where the air passed directly over the coils and where contamination would be dangerous to personnel as a health or fire hazard. The installation of equipment using Freon-12 was prohibited for all other cooling and for walk-in refrigeration installations and for all cold storage- and ice-making plants.

ASF Circular 114 on 9 November 1943, called attention to the fact that many crates and other wooden shipping containers were being fastened so securely that the lumber was not salvagable at overseas destination. Accordingly, methods of fastening were directed which would permit maximum ease in disassembly and salvage of lumber.

The shortage of all types of ball and roller bearings arising particularly out of critical labor shortage led to special precautions assuring maximum conservation through cleaning and proper lubrication of bearings and to proper identification and handling of bearings in storage. This was directed by War Department memorandum on 12 November 1943. Technical services were required to designate inspectors at all base shops and supply points to inspect bearings turned in for replacement and to determine whether they were serviceable.

ASF Circular 3, on 3 January 1944, called attention to the current supply status of certain basic materials. It was emphasized that continuation of the favorable position was dependent upon the course of the war and upon constant surveillance. At that time copper was in a fairly satisfactory supply situation, and it was recommended that all previous uses of copper and copper alloy materials be reviewed with the idea of converting back to copper. In particular, the situation in copper base alloy sheet and strip had been eased by the cut-back in the small arms ammunition program.

Supply and requirements of zinc were in balance. Reconversion and new uses of zinc were encouraged. The improvement in the availability of aluminum precluded the need for substitution of other materials. In fact, new uses of aluminum products were encouraged. The use of secondary instead of primary aluminum in castings was still urged, however. In general new uses for magnesium were encouraged. All of the commonly used ferro alloys were in ample supply with the exception of nickel and low carbon ferro chromium. Any expansion in the demand for stainless steel was still carefully scrutinized. Otherwise alloy steel was in ample supply with the exception of some facilities for producing sheet, plate, and seamless tubing.

In general the following principles were set forth in the program for relaxing previous conservation measures. Revision was to be considered only when military characteristics of the end product would thereby be improved; or revision might be considered when it would result in savings in labor, production time, cost, and facilities. As far as possible the lowest grades of materials were to be used. Each large increase in requirements for materials required the approval of the Production Division, ASF, which cleared proposals with the War Production Board.

Limitations were placed in March 1944, upon the use of 80-octane all-purpose gasoline in Army vehicles operated within the United States. The gasoline was made available for use in combat vehicles in the United States and also for all vehicles participating in maneuvers. The only other authorized use was for the operation of land vehicles, amphibious trucks, prescribed marine equipment, and for research work. Otherwise Army vehicles were expected to use 72-octane motor fuel.

ASF Circular 150, 20 May 1944, rescinded Circular 3, and reviewed the supply situation of the principal basic materials as of that date. In general aluminum, magnesium, and zinc continued to be readily available for essential use. The ferro-alloys were in a comfortable position, while supply and demand for copper were approximately in balance. Nickel and metallurgical grades of chromium were in tight supply. Supply and demand for steel were in balance. Certain fabricated forms continued in tight supply. Copper wire products were in tight supply as was copper tubing and copper rod. The copper industry as a whole was in precarious balance because of a loss of manpower. New uses for or reconversions to the use of aluminum products were encouraged. New uses of magnesium were also encouraged. The steel industry was operating very close to maximum capacity. Certain products were particularly critical such as forging billets, pipe, plate, sheet, rope, railroad wheels, and axles. Supply of alloy steel in general was favorable. Malleable iron casting were critical.

In May 1944, the Army adopted steel ammunition containers for artillery shells and charges. It was estimated that this would require 125,000 tons of steel during the first 3 months of container production. The previous container made of fiber and metal provided inadequate protection. A blow on the package dented cartridge cases and often the dropping of the package caused the case to bulge or to loosen the crimp.

The fiscal year 1944 marked the first year in which joint Army-Navy specifications (JANS) were promulgated. A Joint Army-Navy Specifications Committee was set up to promote uniformity between the Army and Navy on items of military equipment or materials similar in technical requirements. This standardization was expressed in the form of a joint specification for the item concerned. Such a specification resulted in economy of production facilities and manpower; it frequently lowered costs; and it promoted interchangeability between the services thereby decreasing the need for either service to maintain as large a reserve stock as might otherwise be required. The first joint specifications permanently adopted were formalized in March 1944; by the end of the fiscal year the joint

committee had approved publication of 43 specifications. These approvals included some very important items such as cartridges sheet and strip brass, dry batteries, DDT, radio electron tubes, and steel airplane landing mats. At the end of the fiscal year 312 possible joint specifications were being considered.

During the fiscal year 1944 a total of 478 new and 215 revised United States Army specifications were approved; 224 proposed Federal specifications and amendments were cleared within the War Department. The War Department also worked with the National Bureau of Standards in the development of commercial standards and simplified practice recommendations in various fields of production.

Rubber

The beginning of the fiscal year 1944 witnessed the inauguration of volume production of synthetic rubber. During 1943 the ASF focused attention on conserving crude rubber supplies by reducing the crude-rubber content of essential products, by eliminating rubber from less essential items, and by reducing procurement of nonessential products. In the past year this emphasis shifted to the use of synthetic rubber in place of natural rubber, and to adequate production of rubber products. For example, the production of steel tank treads was halted during the year and the output of rubber treads was resumed.

As soon as the supply of synthetic materials became a certainty, the problem of production became a major concern. It was found that considerably more facilities and labor were necessary for the output of finished products using synthetic materials. The most important product to be affected was heavy duty tires.

Because of the serious shortage in truck and bus tires, a tire allotment control was put into effect by the WPB on 16th February, 1944. In turn, the Army Service Forces established a stringent system for rationing tires for military use. A tire control unit was created in the Office of the Chief of Ordnance. This unit received monthly reports from all theaters and from the zone of the interior showing truck tires on hand, issues, and shipments. Reconditioned tires were issued almost exclusively in the continental United States. Unservicable tires were reconditioned in commercial establishments and put back into use. Tire-repair companies were dispatched overseas to repair and recondition tires in various theaters.

Stringent control upon all types of rubber appeared at the end of the year to insure an adequate supply of rubber materials for the successful prosecution of the war. No serious losses in production of items for the Army Services Forces appeared likely although some synthetic plants failed to come into production when scheduled. For this reason some rubber items had to be converted to buna S or neoprene instead of butyl.

The conversion program from the use of crude rubber to synthetic materials was directed by a number of consulting technical committees set up to cover specific groups of products. These committees were made up of technical representatives from the rubber industry, representatives from the Office of the Rubber Director, and representatives from the armed services. Cooperation among all parties

was notable. An outstanding job of field testing was done by the test fleets of the Ordnance Department at Camp Normoyle, Tex., and at Camp Seeley, Calif. Evaluation tests were conducted on synthetic rubber tires, synthetic rubber tank tracks, and synthetic bogies. At the end of the fiscal year the principal limiting factor in the manufacture of rubber products for the armed forces was the lack of adequate manpower in the rubber industry.

Control of Component Parts

The changing procurement programs of the Army Service Forces meant constant adjustment in the procurement of various products and component parts exercising a limiting influence upon end items delivered. During the first half of the fiscal year 1944 there was a decline in machine tool requirements. As a result of upward demands for heavy ammunition, heavy artillery, and heavy trucks, the machine tool industry in the third quarter of the fiscal year began to be unable to meet ASF requirements.

Control of the delivery of machine tools was exercised by the War Production Board. By allocation order, 75 percent of the output of machine tools continued to be available to the armed services. Assignments of the supply available to the ASF was governed by the Master Numerical Preference List prepared by the technical services and approved by the Production Division. A considerable number of diversion requests were submitted and approved by the WPB to meet urgent programs developing at the end of the fiscal year.

In the first half of the fiscal year 1944 the ASF and the WPB agreed to place no further pool orders for machine tools except for certain critical parts. At that time it could not be anticipated what new programs would develop needing special types of tools. In the third quarter of the fiscal year special efforts were made to utilize all idle government-owned machine tools. The War Production Board established a system for reporting government tools. A machine tool utilization committee was established to explore possibilities of obtaining machine tools for new procurement programs. ASF Circulars 148, 19 May 1944, and 200, 30 June 1944, set up the policy and procedure for the guidance of technical services in retaining machine tools and production equipment for current reserves. At the end of the fiscal year it was evident that machine tools would be a definite limiting factor in expanding certain procurement programs.

In the second quarter of the fiscal year antifriction bearings became a major problem in meeting procurement schedules. The War Production Board established an expediting section consisting of representatives of bearing manufacturers and representatives of the ASF. All cases where bearings were required to meet production schedules were referred to this section. The Army Service Forces cooperated with the WPB in cutting back contracts for bearings wherever possible and reducing requirements for bearings as spare parts. The Production Division in June 1944, completed efforts to establish a standard numbering system for antifriction bearings. This was scheduled for presentation to a Federal specifications committee for universal adoption throughout the Government. By the end of the year production of bearings had increased and the moratorium on procurement of bearings as spare parts was lifted.

The procurement program for heavy trucks was hampered by shortages in forgings and castings for heavy duty axles, engines, and transmissions. The Production Executive Committee of WPB appointed an automotive production committee to schedule critical truck components. Within the limits of the overall production program determined by the availability of all facility expansions, quarterly production allocations were made to each claimant agency for the calendar year 1944. The truck production schedule issued by the WPB was adjusted in accordance with the monthly production figures for component parts.

Engine production became increasingly critical during the year. The chief difficulty appeared to be the labor situation in foundries and forge shops as well as inadequacy of facilities. The WPB set up a task committee of Army, Navy, WPB, and War Manpower Commission representatives. This committee succeeded in improving labor management relationships in the industry. This, together with WPB scheduling of production at principal foundries and forge shops, brought an increased and more uniform flow into the delivery of engines to prime contractors.

Procurement of all industrial power trucks was centralized by the War Department in the Office of the Quartermaster General. In consequence requirements were more accurately computed and corrective action to obtain necessary deliveries was speedily taken. The WPB developed an expansion of facilities during the year which increased deliveries of pneumatic tired fork-lift trucks.

Production Scheduling

The problem of balance between deliveries and projected monthly schedules continued throughout the fiscal year. The accuracy of first of month forecasts was used to measure satisfactory procurement control until May 1944. Performance as so measured continued to improve and in the middle of the fiscal year leveled out so that deliveries for approximately 75 percent of the major items each month were within 10 percent of the first of month forecast. This compared with approximately 21 percent in the month of January 1943. While the results obtained under this measure of procurement control were highly gratifying, it became apparent that, having attained a uniformly high level in the technical services, continued emphasis on this single measure of performance would be of doubtful value and might lead to unsound procurement practices aimed at bettering the results shown.

As accuracy of first of month forecast improved it became necessary to direct attention to performance under longer range forecasts. A tendency developed to reduce delivery forecasts as the month of delivery approached. Reductions in requirements and adjustments in schedules which occurred during the period from November 1943, through January 1944, in anticipation of the 1 February 1944 revision of the Army supply program rendered useless any comparison of current deliveries with forecast made more than 1 or 2 months previously. After the 1 February revision of the supply program had been published and realistic schedules developed aimed at the new objectives, it again became possible to measure long-range performance. In the latter months of the fiscal year 1944 there was a marked tendency

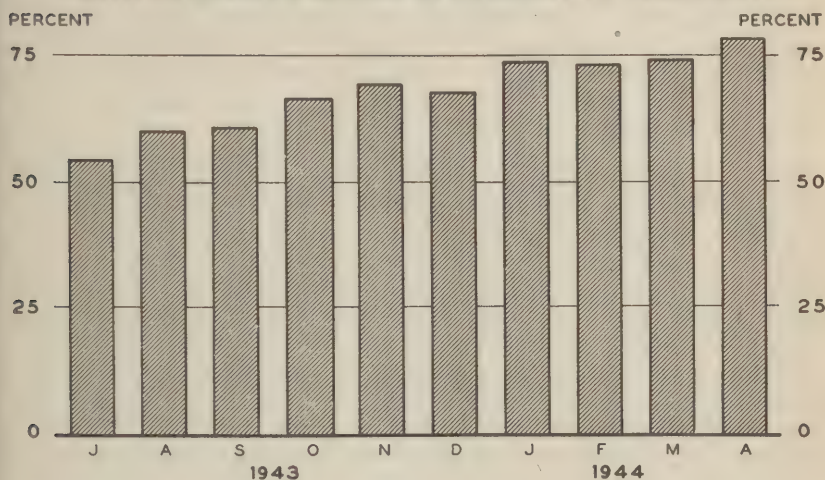
toward a roll-back in forecasts of deliveries with the result that, while first of month forecasts were met in each of the months, April, May, and June, the total deliveries for the 3 months fell 8 percent short (with subsistence excluded) of the forecast made on 1 April for the second quarter.

CHART 29

ACCURACY OF DELIVERY FORECASTS

PERCENT OF ITEMS

WITH DELIVERIES WITHIN 10 PERCENT OF FORECAST



More stringent control of procurement in relation to supply objectives was established during the fiscal year 1944. It was required that production schedules for all items of procurement be brought into synchronization with required production within 30 days following publication of required production. Instances where ASP objectives were established at quantities less than computed requirements were held to a minimum and production in excess of computed requirements was authorized only where production in advance of needs was essential to meet real or contingent future demands without facility expansion, where production in advance of needs was essential to avoid uneconomical production rates, or where cancellation charges were believed to be exorbitant in the light of future issue demands.

The importance of spare parts procurement was recognized by a directive requiring that appropriate provision be made for the manufacture of necessary spare parts even though some reduction in the output of end items would be necessitated thereby.

Packing and Packaging

The problem of preventing corrosion and deterioration of supplies packed for overseas shipment and for delivery in the tropics became increasingly important during the fiscal year. All amphibious operations where supplies had to be landed on beaches demanded lighter weight packages and careful waterproofing. The same needs were

evident for jungle warfare. Theaters required that all packages expected to be handled by individual combat troops be limited to 50 pounds gross weight.

A manual on prevention of corrosion was published by the Army Service Forces on 11 December 1943, for the guidance of depots, arsenals, and manufacturers. An easily removed plastic coating material which prevented corrosion of highly finished metal parts was developed. Three new moisture-vapor-proof barrier materials were perfected for the protection of intricate mechanisms and electrical equipment. The standard for waterproof case lining materials was raised after field experience indicated that former standards were inadequate. This change required the conversion of almost the entire waterproof paper industry to the manufacture of higher quality materials. New adhesives for sealing packages were also developed.

Inspection Procedures

At the end of the fiscal year 1943, the Production Division was considering the desirability of standardizing and simplifying inspection procedures for the acceptance of matériel delivered by War Department contractors. Further studies were conducted during the fiscal year 1944, and, as a result, a manual of standard inspection policies and procedures for the use of all technical services was prepared and adopted. This manual stated the guiding principles common to all technical services in their responsibility for performing the inspection task. It was supplemented in each service by a series of manuals, handbooks, and instructions providing inspection personnel with adequate guidance for performing all inspection operations. Policies and methods were designed to attain the highest degree of quality and uniformity in products going to the Army Service Forces, while at the same time eliminating any unnecessary or duplicating inspection. As a result, it was expected that quality would show definite improvement and all services would be able to make more effective utilization of inspector personnel.

The major change in inspection organization during the year occurred in the Quartermaster Corps. A central inspection service office was created in September 1943, with field headquarters in New York City and with 10 inspection zones throughout the country. Instead of inspection activity directed by the appropriate central procurement depots on a Nation-wide basis, inspection was handled on a geographical basis, each zone office inspecting the output of all Quartermaster contracts in the area.

LABOR SUPPLY

The most important single production factor in the fiscal year 1944 affecting ASF procurement was the growing shortage of industrial manpower. For the most part, the shortages that arose affected particular areas and called for local solutions. A wide-scale national attack upon labor shortages was impossible; the movement of workers from one part of the country to another or from less essential occupations into more vital war work could only be brought about on a voluntary basis.

In a memorandum to the Commanding Generals of the Army Air Forces and the Army Service Forces on 5 November 1943, the Under Secretary of War called attention to the fact that the entire problem of labor relations, labor supply, and manpower in all its phases was an essential part of procurement. The technical services of the Army Service Forces were made responsible for operating problems in labor supply and labor relations affecting plants within their jurisdiction, including utilization of labor, working conditions, and personnel practices. General direction and supervision of all War Department labor activities were vested in the Industrial Personnel Division, Headquarters, ASF on behalf of the Under Secretary. This division was also directed to maintain necessary relations with civilian agencies and national labor and management groups in Washington. This memorandum was confirmed in War Department Circular 317 on 7 December 1943, which specified in more detail the labor functions of technical services, the Army Air Forces procurement agencies, and the service commands.

The emergency manpower situation in aircraft procurement on the west coast led the Office of War Mobilization in the Executive Office of the President to formulate a program in September 1943, to effect necessary cooperation between the many agencies responsible for phases of the labor supply problem. Production urgency committees were established in five west coast centers to determine the order of importance of essential war production in the area and to regulate the placement of new contracts. Alongside these committees, manpower priority committees were established to distribute available labor supply by allocations of priorities and through the labor management committees of the War Manpower Commission to encourage the flow of labor from less essential to more essential activities. Similar committees were later extended to the Akron, Buffalo, Cleveland, Detroit, and Hartford areas. In April 1944, modified production urgency committees and manpower priorities committees were extended to some 75 other areas of labor shortage throughout the United States.

The creation of these local committees required the Army Service Forces to develop an organizational structure for handling procurement activities on an area basis. On each production urgency committee and manpower priority committee an Army representative was designated. These local committees were authorized to place restrictions on the placement of contracts in the area, to set manpower ceilings in plants, and otherwise to balance manpower supply and demand. The Army representative on the early committees was appointed by ASF headquarters, acting on behalf of the Under Secretary. In addition, an advisory committee was set up to assist the Army representative in his duties. The advisory committee was composed of members from the technical services and the Army Air Forces.

Because of the expansion by the War Manpower Commission and the War Production Board of local committees into numerous labor areas, the Army Service Forces set up a regional labor supply organization. This was announced in ASF Circular 85 on 27 March 1944. The ASF regional representative, who was designated to work with WPB and WMC regional offices, was directed to organize an advisory

committee of representatives from each technical service, the Army Air Forces, and the service commands having a procurement interest in the region. The alternate regional representative was a labor advisor designated from one of the technical services or service commands. This regional representative was responsible for appropriate ASF representation on all local production urgency committees and manpower priorities committees. The regional representative likewise arranged for area advisory committees to assist the local official representative. The area representative was responsible to the regional representative on all matters of labor supply arising at the local level in committee areas. In the event of any difference of opinion between the representative of the aircraft resources control office at the local level and the ASF representative, this question was to be referred to Washington for action. To the fullest extent possible local solutions of manpower problems were encouraged.

Circular 85 for the first time set up a regional ASF officer corresponding to the WPB regional offices. As a rule the ASF regional representative was a contracting officer in the region. At Boston, for example, the ASF representative was the Commanding General of the Springfield Ordnance District. In New York City it was the commanding officer of the Ordnance Procurement District; in Philadelphia the Commanding General of the Philadelphia Signal Depot; in Atlanta the Division Engineer; in Cleveland the commanding officer of the Ordnance Procurement District; in Chicago the Commanding General of the Signal Depot; in Kansas City the commanding officer of the Quartermaster Depot; in Denver the Commanding General of the Chemical Warfare Service Rocky Mountain Arsenal; and in Seattle the commanding officer of the ASF Depot.

In order to assist local committees in their operations the Production Executive Committee of the War Production Board prepared a national production urgency list. The Army Service Forces assisted in its preparation. From time to time revisions in Army ratings approved by the Production Executive Committee were forwarded to the local committees. In March 1944 the Production Executive Committee withdrew the national production urgency list and substituted for it a list of 13 "must" programs. For all other procurement activities in an area the decision about urgency was left to local determination.

As a guide to the ASF regional representative and the local representative on manpower questions the Production Division and the Industrial Personnel Division in ASF Headquarters jointly issued a production manpower bulletin. These bulletins covered basic policies on contract placement, facility expansion, manpower controls, and questions of urgency ratings, and outlined information that a local committee might obtain from headquarters about items of urgent production. In addition, urgency circulars were prepared about particular production programs and forwarded to the local committees for their information. A series of meetings were arranged throughout the United States to instruct ASF representatives on production urgency and manpower priorities as committees about their duties.

The most direct action which the Army Service Forces could take to meet labor shortages was to distribute its contracts by available labor supply. In curtailing procurement of particular items when

requirements were reduced, first attention was given to cutting back contracts in areas of labor stringency. This action helped some labor difficulties during the year.

In several instances of exceptional urgency the Army Service Forces requested the War Manpower Commission to conduct a special recruitment program for individual plants. For example, a special drive of 3 days was put on by the United States Employment Service at Providence, R. I., to obtain workers in wire and cable plants. Signal Corps demonstrations were put on to assist in these drives. Another successful recruitment program obtained workers for the Sunflower Ordnance Works in Kansas. The production of critically needed ammunition components had fallen seriously behind schedule because of labor shortages. Over a 2-month period the necessary workers were obtained to put production back on schedule. Other drives recruited workers for aircraft, rubber, ball bearing, battery plants, and other plants. At the end of the year special drives were being made to obtain necessary workers for the artillery, artillery ammunition, truck, and rocket programs.

The problem of adequate labor supply was in many instances a problem of adequate community facilities. To insure housing for war workers the Army Service Forces recommended the establishment of rent controls in several areas during the year. Strong support was also given to the provision of adequate war housing, schools, child-care centers, transportation equipment, and shopping and other facilities. All of these were services provided by other governmental agencies. Through the Committee for Congested Production Areas the ASF helped in providing community facilities in the most stringent labor shortage areas.

In August 1943 the War Department was confronted with a threat of substantial decline in scheduled deliveries of aircraft at the Boeing plant at Seattle, Wash. Working in close association with other interested agencies ASF headquarters gave careful attention to an action program to meet the manpower shortage at this plant. Within a few weeks intensive in-migration into the area was brought about. Adequate housing was completed. Wage issues were resolved. Facilities for child care were extended, transportation was improved through the delivery of additional equipment and spare parts, and plant facilities for employees were improved. War Department contracts which could be procured elsewhere were withdrawn. Within 60 days the manpower difficulty was removed and original Boeing delivery schedules were resumed.

In these and similar cases the War Department stressed the importance of community organization as essential to developing necessary community adjustments. Leaders of the community were asked to accept responsibility for the solution of manpower problems and to organize the community so that recruitment problems could be solved. Adjustments in shopping hours, in the use of recreational facilities, and manpower controls helped solve shortages in many different areas.

A continuing objective of the ASF was to obtain constant improvement in the utilization of manpower employed on War Department contracts. During the year charges of labor wastage were leveled at a number of War Department operated and contractor operated establishments. In some instances these charges infected a whole commu-

nity and retarded the flow of workers essential to the maintenance of scheduled production. Most of the charges were found to be based upon false rumor arising out of ignorance about the real causes for breaks in the work flow of complicated assembly or repair operations. In almost every instance investigation revealed a steady and sharp rise in man-hour productivity. In all instances the ASF encouraged an exchange of experience on manpower problems between contractors and advocated improvements in personnel practices which would lead to increased utilization of manpower.

Deferment of Workers.

During the fiscal year the Army Service Forces continued its program of providing assistance to contractors in arranging for the orderly release of workers to the armed forces. The efforts to increase the number of women, older men, and physically handicapped workers in war industry were redoubled. A change in induction policies early in 1944 concentrating further selection upon men under 26 years of age required a drastic limitation in the granting of occupational deferments for younger men.

The War Department decided not to request deferments for any men under 22 years of age and to limit requests for deferments of men between 22 and 26 years of age to a bare minimum. Within the ASF the policy was adopted of requesting deferments only for keymen in the latter age bracket engaged in research and development activities and certain critical procurement programs such as rockets, radar, and heavy trucks. The recommendations for deferments were screened by an interagency group which then made recommendations to the Selective Service System. Occupational deferments ceased to be a problem with men over 30 years of age.

The ASF continued its procedures for transfer of military personnel to the enlisted reserve corps in order to permit them to resume their work in key jobs. These requests were screened on an individual basis and action was limited to those cases where it was clearly evident that the applicant would be of greater service to the war effort in civilian status. Five thousand soldiers who had been miners were transferred to the enlisted reserve corps for temporary periods in order to increase the output of copper, zinc, and nonferrous metals. An additional group was temporarily released to assist in overcoming the manpower shortage in west coast aircraft production. Withdrawal of all reserve corps men under 26 years of age from the mines was begun in the spring of 1944. Others were withdrawn as the urgent need for their services declined.

Labor Relations

While the Army Service Forces avoided any participation in the development of collective-bargaining relations, it kept all concerned constantly aware of the disastrous consequences of work stoppages. In several instances direct appeals were made to workers to use only orderly procedures for the settlement of disputes. In this way serious threats to radar, rubber, truck, and aircraft procurement were entirely averted or materially reduced.

There were seven cases during the year in which the War Department was directed to take over and operate industrial facilities in order

to remove interference or the threat of interference with important war production. These cases were handled by the Army Service Forces. One involved 13 leather manufacturing concerns in Massachusetts where a jurisdictional dispute resulted in a protracted strike. The Point Breeze facilities of the Western Electric Co. were taken over when the work stoppage growing out of racial difficulties curtailed the production of important radio and radar equipment. Ten textile manufacturing plants in Fall River were operated by the ASF when a jurisdictional dispute resulted in the strike of some 10,000 individuals. Another case was the Army operation of the entire railroad system of the United States for 22 days in December and January 1943 and 1944.

The facilities of the Department of Water and Power of the City of Los Angeles were operated when a strike of the key utility workers paralyzed the municipal power system and shut down many important war establishments. Because of a refusal of the company to comply with an order of the National War Labor Board, the ASF was directed to take over the plants of the Ken-Rad Tube and Lamp Corporation. A similar situation resulted in operation of the Hummer Manufacturing Division of Montgomery Ward and Co.

In all cases where strikes were in progress when the Army took over, production was restored to normal within a short period of time; in those cases where a strike was threatened the strike was averted. All of the facilities mentioned above, with the exception of the Hummer Manufacturing Division of Montgomery Ward, were returned to private management before the end of the fiscal year.

Throughout the year the Army Service Forces worked jointly with other agencies to develop and insure compliance by War Department contractors with general policies on wage stabilization, dismissal wages, and engineering service fees. Procedures were developed for presenting War Department interest in pending wage-rate cases to the National and Regional War Labor Boards. In rare and unusual cases the War Department recommended an exception to wage stabilization policy as the only means of meeting manpower shortages. These certifications were made only by ASF Headquarters and only in such exceptional situations that precedents would be avoided. Steps were taken to eliminate the use of labor brokers by War Department agencies and contractors as a means of avoiding the wage stabilization policies.

During the year a number of requests for assistance from contractors were handled in obtaining relaxation of certain statutory labor standards. These requests for the most part sought exceptions from prohibitions against the employment of women between 16 and 18 years of age, against the employment of women in excess of certain prescribed hours per day or week, against the employment of women at night, against payment of overtime to women for work above regular hours, and against the employment of home workers. Most of the relaxations requested were of a temporary or limited nature to enable contractors to meet accelerated procurement schedules where no other alternative was available.

Relaxations from the provisions of the Walsh-Healey Public Contracts Act were obtained for the Ordnance Department for the heavy truck program; for the Quartermaster Corps in its procurement of wool socks, dehydrated food, and evaporated milk; and for the Signal

Corps in its procurement of batteries. Relief was granted only where there was a substantial and demonstrated need. State labor officials meeting in Washington in March 1944 agreed that the ASF procedures for obtaining relaxation of labor standard laws was satisfactory.

During the year steps were taken to eliminate interference in the recruitment programs of the Alaska Department and the Northwest Service Command arising from a lack of uniformity of employment conditions between civil service and contractor employees. Uniform policies were set up for the use of military personnel on construction work and for the employment of military personnel on pass or furlough. Through the Ship-Building Stabilization Committee new labor standards were established in ship construction and repair work, including hours of work and conditions of work. These steps contributed to keeping the industry relatively free of strikes.

In August 1943 ASF Headquarters indorsed the use of wage incentive plans by War Department contractors. It was pointed out to all contracting officers that such a plan to be successful must have complete understanding and acceptance by both management and labor. In developing such programs emphasis was to be placed upon increased output through time-saving operations, better planning of work, and similar methods. No reduction in the current earnings of an individual and no changes in basic wage rates resulted from the adoption of such schemes. When a wage incentive plan was agreed upon by management and labor, the approval of the War Labor Board was sought. In October, the National War Labor Board declared that it would consider only plans voluntarily submitted by employers or jointly agreed upon by employers and unions and that its action would be based upon the sole criterion of whether plans would result in an unauthorized wage rate increase. Procurement officers of the ASF encouraged contractors to adopt wage incentive plans, which were then submitted to regional offices of the National War Labor Board.

During the year the ASF established offices adjacent to ports of embarkation to settle grievances which might arise in connection with the employment of maritime workers on vessels under contract to the Army. A policy was also adopted permitting the admission of union representatives to ports on legitimate trade-union business.

New procedures were adopted during the year clarifying the status of an employee who was removed from a war plant at the request of the War Department pending final determination of his loyalty. When the War Department requested removal, this act did not change an employee's rights and privileges such as seniority and did not break the continuity of his employee status. Wages lost during the period of removal were made up if the individual was eventually cleared or the need for exclusion ceased.

During the year the Army Service Forces was called upon to present many studies about labor situations in particular industries, as well as about labor problems in occupied areas overseas. Material was prepared for presentation to Congress in the consideration of the War Labor Disputes Act and the proposed legislation requiring universal national service. On most other legislation the War Department expressed no opinion, since the bills dealt with general social and economic consideration. Assistance was given the commanding general of the Central Pacific area in formulating and carrying out a

broad program for the transfer of labor functions previously performed by the Military Governor of Hawaii to civilian agencies.

Manpower Outlook

At the end of the fiscal year labor supply problems were threatening the current and future production of vitally needed military items. Recruitment of workers for new and expanding programs, such as heavy artillery, heavy ammunition, heavy trucks, rockets, and radar, was increasingly difficult. Labor shortages in forges and foundries, heavy tire factories, lumber camps, and on railroads were likewise threatening War Department procurement schedules. A widespread interest in the reconversion of industry to civilian goods threatened to result in a sizable movement of war workers to jobs believed to have a post-war future. In various parts of the country recruitment campaigns by industries performing less essential war activities emphasized the importance of post-war job security. They implied that workers joining these industries immediately would have greater post-war employment security than other employees.

More public attention was given to cut-backs in particular production schedules than to increases in other production programs. Consequently exaggerated rumors of unemployment arising from military production programs affected all employees in war industry. In addition, worker fatigue resulting from heavy, unbroken work schedules was causing management in some plants to worry about possible declines in productivity. Although turn-over rates in general had dropped during the year, war contractors were encountering increasing difficulties in replacing workers selected for service in the armed forces. Potential women workers were not responding to job opportunities as they had during the early war period. The increasing frequency and severity of strikes and slow-downs during the 6 months which preceded the invasion of France were causes for concern.

By 30 June the prospect of meeting procurement requirements for the calendar year 1944 depended almost entirely upon a solution to the manpower problems confronting all war contractors and the basic industries supplying them.

Chapter 10. MEDICAL SERVICES

There was a number of outstanding medical developments during the fiscal year 1944. Two new types of hospitals were added in the United States—the regional station hospital and the convalescent hospital. A reconditioning program was launched to improve the physical strength of men leaving hospitals. Emphasis in neuropsychiatric practice shifted from diagnosis and treatment to preventive measures promoting good mental health. Penicillin proved to be a therapeutic agent of great value, while the early promise of DDT was amply fulfilled. The health of the Army in the United States and overseas remained very satisfactory.

HOSPITALIZATION

During the past fiscal year the hospitalization plans of the Army Service Forces were carefully reviewed to insure their adequacy. Station hospital facilities were originally constructed on the basis of providing hospital beds equal to 4 percent of the total troop strength housed at a post. Experience proved this allowance to be more than ample. As a rule, the hospital beds occupied ran under 3 percent of total troop strength.

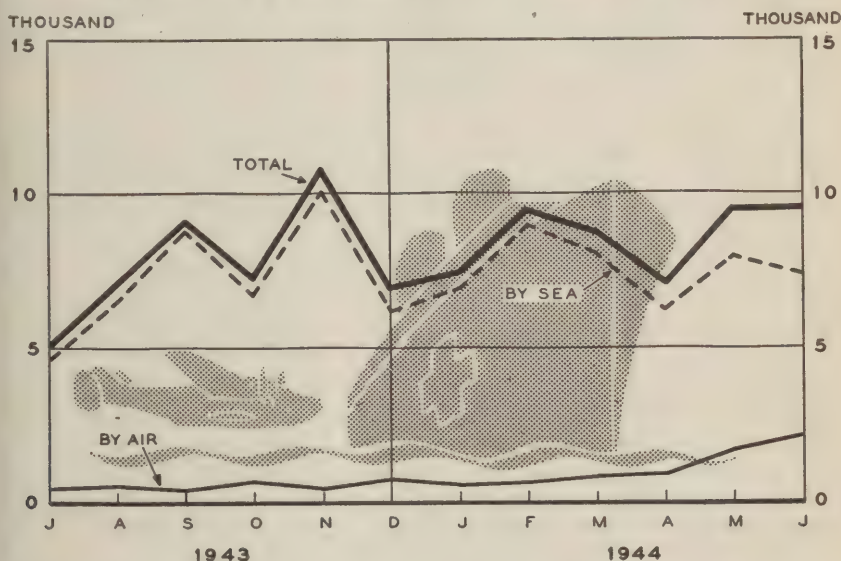
Determination of hospital capacity required for soldiers wounded overseas was not easy. The experience of the First World War provided valuable information about the proportion of casualties to total troops engaged in military operations. On the other hand, the employment of air power as a primary weapon in this war and the nonuse of gas pointed to different characteristics between this war and the previous one. Up to 30 June 1944, no battle experience in any overseas theater could be regarded as providing "typical" data upon which to plan hospital requirements. In the Pacific areas the assault upon Tarawa entailed heavy losses for a few days of operation. In the Solomon Islands the daily losses were much lower but continued for several months. The occupation of the Marshalls, on the other hand, was performed rapidly and incurred relatively few losses compared with Tarawa. The advance of allied land forces in New Guinea was slow over extremely difficult terrain against a well dug-in enemy.

In North Africa an initial assault against weak opposition was followed several months later by a hard drive of 2 months' duration through Tunisia. The occupation of Sicily moved rapidly compared with the advance of allied forces on the Italian Peninsula until the break-through at the end of May. Which of any of these operations was to be regarded as an adequate basis for predicting future casualties?

The number of medical facilities required in an overseas theater could be modified by the evacuation policy. Up to the end of the year, it

was the general practice for overseas theaters to return to the United States all patients requiring from four to six months, or more medical treatment. This policy did not mean that patients were kept in an overseas theater for 120 days and then returned to the United States. Actually, of all patients evacuated from overseas, only 15 percent had been hospitalized 120 days before they were moved. An increase or a decrease in the length of time patients were held overseas had a definite effect upon hospital requirements in the United States. For example, an overseas theater with the policy of sending to the United States all patients requiring more than 180 days medical care would send 20 percent of its battle casualties and 3 percent of its nonbattle casualties to the United States. On the other hand, a theater with a 120-day evacuation policy would return 30 percent of its battle casualties to the United States.

CHART 30
PATIENTS EVACUATED FROM OVERSEAS



An additional factor in determining total numbers to be evacuated was hospital ship capacity. By the end of the fiscal year the Army Service Forces had 17 hospital ships in service, with a total capacity of 9,500 beds. Other hospital ships were to be added before the end of the calendar year. Because the average turn-around time exceeded 30 days, the number of patients who could be returned in hospital ships each month was less than the total capacity of hospital ships. Other patients were returned in troop ships, but the numbers who could thus be accommodated depended upon the severity of the wounds or injuries.

Actual evacuations each month during the fiscal year 1944 from overseas theaters to the United States are shown in the accompanying table. With the exception of the month of November 1943, the total, in general, ran somewhat under 10,000 each month, of which about 90

percent were returned by sea. The numbers evacuated by air increased sharply in the last 2 months of the fiscal year. For the year as a whole some 100,000 patients were evacuated from overseas.

By the end of the year there were 60 general hospitals scattered throughout the United States. A total bed capacity of 100,000 was projected for these hospitals. Actual occupancy of general hospital beds ran about 50 percent of total potential capacity. It was expected that the number would increase sharply in the fiscal year 1945.

In order to move patients rapidly from ports of embarkation to general hospitals throughout the country and in order to equalize the load, a medical regulating officer was established in the Office of the Surgeon General during the year. This officer, working in close cooperation with the Office of the Chief of Transportation, scheduled use of hospital trains and directed the movement of patients. The policy was continued of sending evacuated wounded and injured soldiers to the general hospital nearest their home except in those cases requiring specialized treatment by a particular general hospital. Facilities were provided by the end of the year in 44 of the 60 general hospitals to furnish specialized medical and surgical diagnosis and treatment. The number for each specialty was as follows: Arthritis, 1; tuberculosis, 1; syphilis of the central nervous system, 12; neuropsychiatry, 19; neurosurgery, 18; histopathologic centers, 15; vascular, 3; thoracic surgery, 6; amputations, 6; plastic surgery and ophthalmologic surgery, 6; blind, 2; deaf, 3; deep X-ray therapy, 9; radium therapy, 3; prisoners of war general treatment, 12; prisoners of war specialized treatment, 4.

Construction of new general hospitals was discontinued in July 1943. The number of station hospitals increased from 431 to 478, and the number of beds from 218,166 to 258,511. New construction was almost entirely of the emergency cantonment type. Some of the larger, more permanent station hospital facilities were to be used to augment general hospital capacity if the numbers evacuated from overseas should so require.

At the same time that all new construction at general hospitals was abandoned, a 20-percent increase in capacity was authorized without any new construction in order to provide better facilities for reconditioning patients. The facilities for housing convalescent soldiers were provided in available barracks and by taking over certain Civilian Conservation Corps and National Youth Administration camps. In a few instances properties adjacent to hospitals were leased.

A major change in the hospital system in the zone of the interior was provided by War Department Circular No. 140 issued on 11 April 1944. The new hospital system resulted from the necessity of making maximum utilization of available medical facilities within the United States. Within the zone of the interior both the Army Service Forces and the Army Air Forces maintained hospitals at military facilities throughout the United States. Circular No. 140 provided that military personnel in the United States would be treated at the nearest adequately staffed and equipped Army dispensary or hospital regardless of command jurisdictions. Each hospital would admit patients from adjacent areas; a station hospital was ordinarily expected to serve an area within a radius of 25 miles. In addition, the circular provided for a new type of hospital—the regional station hospital. Such a hospital was one specially staffed and equipped to

provide definitive medical, surgical, and hospital care except for patients requiring specialized treatment in a particular general hospital. The regional station hospital received patients from a prescribed area, usually in a 75-mile radius, regardless of command jurisdiction. The creation of this new type of hospital facility ended the previous practice of transferring from station hospitals to general hospitals all patients in the United States requiring protracted medical attention. The regional station hospitals were operated both by the Army Service Forces and the Army Air Forces. There were 30 such hospitals under the ASF by 30 June 1944. The plans for areas to be served by station hospitals and regional station hospitals were worked out jointly by service commanders of the ASF and field commanders of the Army Air Forces. Area coverage was still in process of adjustment at the end of the fiscal year.

Circular No. 140 provided that medical personnel in each hospital was to be kept at the minimum necessary to maintain a properly balanced staff. Each hospital was directed to operate a convalescent section. General hospitals would provide medical facilities only for patients from the zone of the interior needing highly specialized treatment. Otherwise their facilities would be reserved for handling all military personnel evacuated from overseas. The circular authorized a second new type of hospital facility—the convalescent hospital to provide care for military personnel during convalescence and reconditioning.

The movement of patients within the United States is shown in the accompanying diagrammatic sketch. Military personnel stationed in the United States who sustained an injury or contracted a disease might receive emergency treatment at a dispensary and be removed as rapidly as possible to a station hospital. From a station hospital they might be moved to a regional station hospital or to a general hospital. From a general hospital, patients might receive a medical discharge from the Army and return to their homes, might be sent to a convalescent hospital for reconditioning and return to military duty, or might be discharged and sent to a Veterans Administration hospital under special circumstances. Patients evacuated from overseas were sent from a debarkation hospital—a general hospital in the immediate vicinity of a port—to a general hospital in the interior. From here, overseas patients might receive a medical discharge, be sent to a convalescent hospital for reconditioning and return to duty, or be sent to a hospital of the Veterans Administration.

The trend in number of beds occupied at station and general hospitals during the year is shown in chart 34. Peak occupancy in station hospitals occurred in August 1943. Since that time there has been a steady decline as the number of troops in the United States has declined.

MEDICAL DEVELOPMENTS

Continuing attention has been given to the prevention of disease in the protection of the health of troops everywhere. The Board for the Control of Epidemic Diseases in the Army, appointed by the Secretary of War in January 1941, made several notable advances in the prevention and treatment of diseases. Methods of control were devised for scrub typhus, a disease occurring particularly among troops bivou-

CHART 31

HOSPITALIZATION IN THE ZONE OF THE INTERIOR

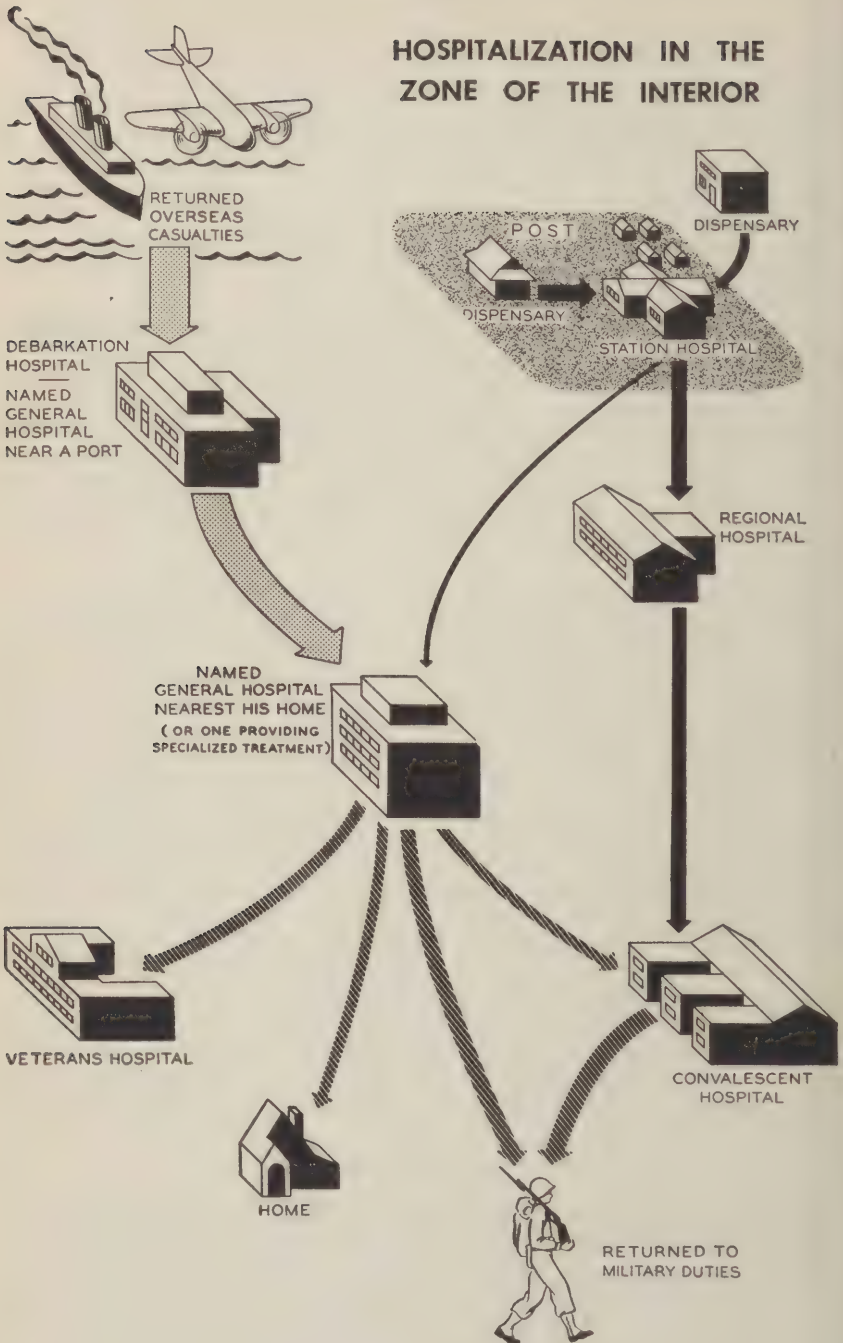
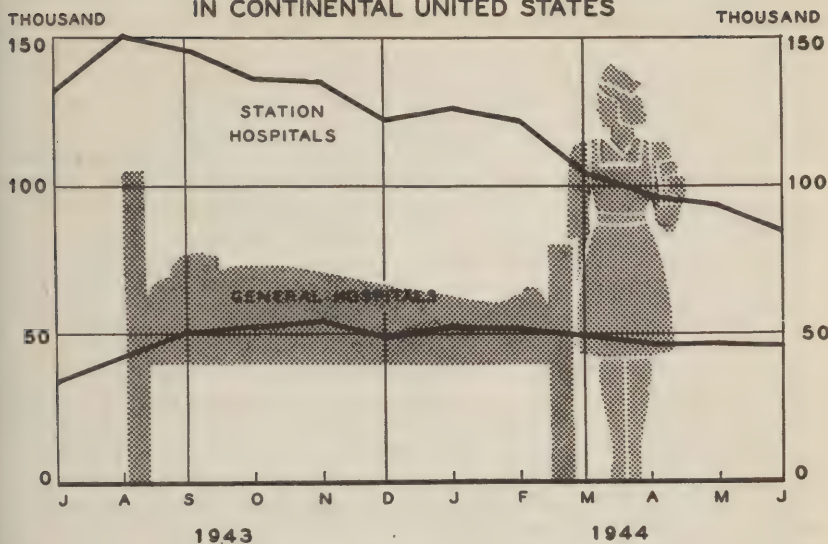


CHART 32
HOSPITAL BEDS OCCUPIED
IN CONTINENTAL UNITED STATES



acked in or near Kunai grass. Extensive investigations were also made on sandfly fever, hepatitis, dengue fever, and dysentery. The Commission also made studies of some of the more common diseases occurring among troops in the zone of the interior including a typical pneumonia, influenza and other respiratory infections, poliomyelitis, rheumatic fever, meningococcal meningitis, coccidioidomycosis, and others.

A noteworthy advance was the development of a promising vaccine against influenza. Procurement of a large supply of this vaccine for the Army was approved. Extensive investigations of the bacteriology of the air in barracks and hospital wards was undertaken to combat airborne infections. A successful method of oiling floors and bedding to reduce the number of bacteria was evolved. Human gamma globulin, a byproduct obtained during the preparation of albumin from pooled blood plasma, was found to be capable of preventing or modifying measles. A skin test for determination of susceptibility to mumps was developed and progress was made on a vaccine for active immunization against this disease.

Advances were made in venereal disease control through new methods of treatment, improved control measures, and a realistic educational program aimed at the individual soldier. As a result of large scale experimental studies, penicillin was found to be highly successful in the treatment of the three most prevalent venereal diseases—gonorrhea, syphilis, and chancroid.

The importance of malaria as a source of noneffectiveness among troops has become a matter of common knowledge. Vigorous attempts were made to combat the problem, including measures to strengthen "malaria discipline" under combat conditions. A minimum of 4 hours basic instruction in malaria control was given to im-

press upon the individual soldier the necessity of observing personal precautions against malaria. Malaria control organizations, staffed with specially trained personnel, were sent to all malarious overseas theaters. The beneficial results of control measures were reflected in a decline in incidence rates during the last few months of the year.

A promising new weapon for the control of malaria was DDT, which was effective against both larval and adult mosquitoes. Experimental work in several theaters indicated that the control of malaria would be greatly facilitated through the use of DDT. Control work at permanent posts in the United States has resulted in the lowest malaria rates ever recorded among troops in this country.

The Army's "crawling enemies"—lice, flies, bedbugs, and other insects—were successfully attacked by increasingly effective insecticide materials. DDT has virtually revolutionized methods of insect control. The application of DDT powder within clothing, either by hand or by mechanical dusters, has proved a successful means of controlling louse infestation in large civilian populations. A single dusting of DDT is effective from 1 to 6 months and inasmuch as the powder is water resistant, its lethal effect persists through several launderings. Approximately 30 seconds are required to delouse an individual. These features of DDT make it of immense significance in combatting the threat of typhus epidemics. Its value in this connection was conclusively proven by the work of the United States Typhus Commission during the Italian campaign. More than a million susceptible civilians of Naples were deloused with DDT and the threat of a typhus epidemic was stopped.

In the 620 Army-operated industrial installations, employing approximately 900,000 workers, industrial medical dispensaries and first-aid stations have been provided and staffed with trained personnel. Preplacement physical examinations, general health and immunization programs, and accident-prevention campaigns have been carried out. Mass tuberculosis surveys have been undertaken at certain plants, resulting in the taking of over 176,000 X-ray plates. Six small Army hospitals for the care of industrial civilian employees and their dependents were established in "remote" areas where no civilian medical services were available. This program tended to decrease absenteeism and had a marked effect on reducing occupational disease to a minimum. In this way it contributed to increased production.

The Armored Medical Research Laboratory at Fort Knox, Ky., and the Army Industrial Hygiene Laboratory at Baltimore, Md., performed research work on the control of occupational health hazards and medico-physiological and safety factors associated with the operation of armored vehicles.

The training and assignment of nutrition officers has continued. Overseas nutrition requirements and the adequacy of rations were studied and recommendations for improvements submitted.

Sanitary engineering activities insured pure drinking water, adequate bathing and swimming facilities, and proper disposal facilities for waste and garbage.

Penicillin

Penicillin deserves special mention in this report because knowledge of its therapeutic value was greatly accelerated during the fiscal year.

Within this period of time penicillin grew from a little-known laboratory curiosity into a life-saving drug of great value in military medicine. Perhaps never before in the annals of medicine has the gap between clinical experiments and practical application of a drug been bridged in so short a time.

Although many agencies played a part in developing penicillin and in establishing its clinical uses, none did more to confirm and to extend its range of usefulness than the Army Medical Department. The Army program of penicillin experimentation began at Bushnell General Hospital in April 1943. Later, in June 1943, studies commenced at Halloran General Hospital. Each of these installations functioned as "schools" in penicillin therapy, where medical officers from 24 other general hospitals were trained to carry on penicillin studies at their own stations. While the two centers were operating, the supply of penicillin was so meager that the drug was doled out with the strictest economy in order to ascertain more exactly the usefulness of this new agent, to determine its indications and contra-indications, and to standardize therapeutic procedures in its use.

Among the diseases selected for early penicillin treatment were osteomyelitis and other wound and systemic infections, and sulfa-resistant gonorrhea. The latter disease was selected for penicillin therapy because of its importance as a cause of loss of time from duty. Former methods of treating sulfa-resistant gonorrhea were lengthy, time-consuming, and arduous. It was found that penicillin could achieve prompt cures in practically 100 percent of all cases. This use alone established penicillin as a therapeutic agent of immense value in the military service.

In spite of great technical difficulties, progress in the manufacture of penicillin was swift. As greater amounts of the drug became available, the Army's program of penicillin therapy expanded. Twenty-eight general hospitals were engaged in the study of penicillin in surgical infections by 1 January 1944, while 16 centers were carrying forward studies on the treatment of sulfa-resistant gonorrhea.

As a result of the intensive studies undertaken in Army hospitals in the United States, it was felt that sufficient evidence had been obtained to justify the use of penicillin in overseas theaters. Many cases treated in this country were evacuees with infected wounds that required prolonged hospitalization and were often life-endangering. It was realized that if penicillin could be administered early, i. e., as soon as possible after injury, infection might be more effectively controlled, complications prevented, and recovery hastened. Therefore large amounts of penicillin were sent to various theaters of combat where it was administered early under the supervision of trained medical officers. Since penicillin has been taken to the front lines, duration of hospitalization has decreased and a greater number of men have been returned to duty. At first, the use of penicillin was greatly limited in combat zones by the need for refrigeration and by the very short effective period of the drug. The latter difficulty has been largely eliminated as the potency period has been extended from 3 to 6 months or longer.

As a therapeutic agent, penicillin is unique in many respects. It is derived from a new source of healing agents—the micro-organisms of the earth. From a medical standpoint, however, its most attrac-

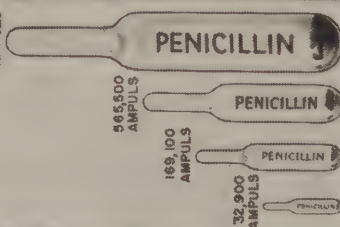
Facts About Penicillin

PRODUCTION • PRICE • PURITY • POTENCY

INCREASE IN PENICILLIN PRODUCTION

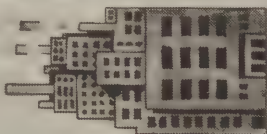
The supplies available for the Armed Forces and controlled civilian use have been expanded greatly.

2,900,000 AMPULS



MANUFACTURING FACILITIES HAVE EXPANDED RAPIDLY

22 PLANTS



7 PLANTS

JULY 1944

JULY 1943

In July 1943, 7 plants were producing penicillin. By July 1944, 22 plants were producing penicillin.

PENICILLIN IS PURER



JULY 1943

JULY 1944

Refinements in manufacturing processes have greatly increased the purity of penicillin.

THE KNOWN STABILITY OF PENICILLIN IS INCREASING



YESTERDAY

TODAY

The original product remained potent only three months. Today penicillin produced by some manufacturers retains its potency for 6 months.

Note: The product of two manufacturers retains potency for 9 months.

THE PRICE OF PENICILLIN HAS DECREASED MARKEDLY

\$ 20.00 PER AMPULE



\$ 2.50 PER AMPULE (AVERAGE)



JULY 1943

JULY 1944

tive features are its enormous antibacterial power and its remarkable freedom from toxicity. It is not in any sense a cure-all, as Army experiments have shown. For example, penicillin is of no value in the treatment of malaria—one of the Army's leading health problems. But its range of effectiveness in conditions that occur relatively frequently among military personnel makes its value self-evident.

Case reports on all Army patients treated with penicillin have been carefully collected and analysed by the Medical Department. A wealth of authoritative information has been recorded, particularly on the treatment of surgical infections. Current investigations of the value of penicillin in early syphilis, and in many acute infectious diseases, will go a long way toward advancing the proper use of this drug.

The potentialities of penicillin have not been fully explored and in the year ahead even greater attainments may attend its use. One objective of current penicillin research is to synthesize the drug with known chemicals in the same way that vitamins have been synthesized. Progress is being made in this direction and another year may witness its achievement.

Medicine

Medical care in Army installations continually improved as a result of accumulated experience and the development of new methods of diagnosis and treatment. To insure the highest quality of professional care for the sick and wounded, the consultant system was broadened and educational programs devised for the exchange of medical information.

In addition to the regularly assigned medical officers who served as consultants to service commands and to surgeons in overseas theaters, 19 outstanding physicians in selected internal medicine specialties were appointed as consultants to the Surgeon General. These civilian consultants were used from time to time in formulating policies regarding the management of specific diseases. Their work was of great value in maintaining proper professional standards in Army hospitals.

Clinical work in military hospitals covered a wide range of diseases and their treatment. Reports from overseas theaters indicated that, with the exception of malaria, tropical diseases caused relatively little embarrassment to military operations. Nevertheless, tropical diseases were studied in anticipation of their introduction to this country by Army personnel from overseas. One general hospital was designated for the specialized treatment of these diseases. It was expected that improved treatment at the Tropical Disease Center would diminish hospitalization and permit the retention in the service of a large proportion of individuals once infected.

As a result of careful research and overseas experience, directives on the treatment of malaria were revised and many important aspects of malaria therapy were clarified. It was demonstrated that atabrine possessed various advantages over quinine; that atabrine was as ef-

fective in the treatment of malaria as quinine: and that suppressive doses of atabrine could be given to large organizations heavily infected with malaria so that the organizations might be held together, retrained, and returned to combat. Valuable data never before available on malaria, especially about relapses, were acquired.

In the broad field of tuberculosis control, continued efforts were made to prevent entrance of individuals with active tuberculosis into the Army and to dispose of cases discovered after entrance on active duty. Medical policy at the end of the year called for early discharge of tuberculosis cases to facilities of the Veterans Administration or, in certain cases, transfer to Fitzsimons General Hospital, where methods of treatment were well established. Approximately 4,000 soldiers were discharged because of tuberculosis during the past year. A fair picture of the efficacy of the Army tuberculosis program was afforded by comparing the hospital admission rate for tuberculosis in World War I, which averaged 13 per 1,000 men per year, with the World War II rate which dropped from a peak of 3 admissions per 1,000 men per year to 0.9 in recent months. The average for 1943 was 1.2.

Neuropsychiatry

While neuropsychiatric disorders continued to be a major medical problem of the Army, marked strides were made in lessening its magnitude. A large percentage of combat casualties were returned to duty as a result of early treatment. Increasing emphasis on proper job assignment also enabled many individuals with neuropsychiatric difficulties to remain in the Army and render valuable services. Recognition of the importance of morale and motivation and the relationship of these factors to neuropsychiatric casualties likewise helped to salvage many men.

Earlier in the war, Army psychiatrists were primarily concerned with the disposal of psychiatric cases. Emphasis, however, has now shifted from diagnosis and disposal to *prevention* of mental casualties. Consequently study concentrated on the causes of mental breakdown and their elimination. This involved a searching analysis of the everyday problems of the soldier. Length of combat, exhaustion, extremes of temperature, mental fatigue, misassignment, low morale, poor leadership, lack of personal conviction about the necessity for fighting this war, and other factors were found to precipitate psychiatric break-downs. To prevent them, control or modification of the causative factors was necessary.

Despite the acute shortage of psychiatrists, steps were taken to implement the preventive psychiatry program. The first was to place psychiatrists in each basic training center of the Army. Here they engaged in the triple function of screening, prevention, and treatment. Other psychiatrists were assigned to combat areas where they could detect signs of impending mental disorders and institute early treatment.

Preventive psychiatry was undertaken primarily through an educational program. Attempts were made to teach military personnel the principles of good mental hygiene based on knowledge of human

behavior. It was believed that this knowledge could be used in maintaining individual mental health and in solving some of the problems of leadership and morale. Radio programs, films, posters, and other informational material were used to impress upon troops the fact that the Nation as a whole is threatened by the enemy and that every individual must fight for the country's survival. There was close collaboration between the Office of the Surgeon General and the Morale Services Division in these educational activities.

Treatment of psychiatric casualties was based on several clearly defined premises. First, every case was regarded as salvageable until proved otherwise, and treatment priority was given to those cases expected to return to duty. Secondly, every case was regarded as a medical emergency, since immediate treatment often prevented symptoms from becoming fixed. In combat areas and in training centers, cases were seen early. A third principle of treatment was that of keeping psychiatric patients out of hospitals. It was well recognized that hospitalization exaggerated the concept of illness in patients' minds. As a consequence, they were treated on an out-patient basis, but in a military atmosphere and under strict discipline. A fourth treatment principle was based on the fact that many psychiatric cases were caused by situational reactions. Every effort was made to modify or remove the situational factor believed to have precipitated the disorder. This applied particularly to the problem of job assignment. Attempts were made not only to assign individuals to jobs for which they were emotionally fitted, but also to train them for specific jobs as an integral part of treatment.

Group psychotherapy was rapidly adopted and increasing use made of occupational therapy, recreation, athletics, and music. Two hospitals in this country were exclusively devoted to the care of psychotic patients. In addition, 16 centers were established for the treatment of men returning from overseas.

Assignment of neuropsychiatrists to all Ground Force divisions was authorized on 19 October 1943. Sixty-one neuropsychiatrists were assigned to divisions in November 1943 as members of the staff of the division surgeon. The functions of the division neuropsychiatrists embraced all matters pertaining to the mental health of the command. Special attention was devoted to preventive psychiatry, particularly its relation to discipline and morale. Primarily, psychiatrists sought to prevent indiscriminate evacuation and to administer prompt therapy. Thus they conserved manpower. It was demonstrated anew that appropriate treatment administered at the clearing station resulted in the return of more neuropsychiatric casualties to duty than when treatment was initiated behind the lines.

The necessity for manpower conservation led to the study of means of using soldiers with psychoneurotic disorders. It was believed many were salvageable. Moreover, these soldiers when hospitalized occupied some 10,000 to 12,000 beds. An experiment to determine salvageability among this group was authorized on 5 February 1944 and was conducted at ASF training centers located at Aberdeen Proving Grounds, Fort Belvoir, and Camp Lee. In the initial experiment, 1,253 patients were chosen for retraining. Results indicated that a

total of 880, or 70 percent, of the troops were retrainable to an assignable level.

A standard program for the reconditioning for neuropsychiatric casualties was developed. It provided for treatment of patients in groups rather than on an individual basis and included full-time compulsory activities in physical reconditioning, group psychotherapy, occupational-industrial therapy, and recreation. Patients were housed outside hospitals, thus freeing large numbers of beds for cases requiring hospital care.

Follow-up studies were undertaken on some 5,000 men discharged from the service because of psychoneuroses. An attempt was made to find out how many were working, the number needing psychiatric or medical care, and the number receiving such care. Information was also obtained on how long it took these men to get back to work after discharge and whether or not difficulty was met in obtaining employment because of medical discharges. No indication was made at the time of discharge that the cause was a psychoneurotic condition.

Because of widespread public misunderstanding of psychiatry, and particularly of the term "psychoneurosis," efforts were made during the year through the press, radio, and lectures to correct the public's conception of mental illness.

Surgery

Mortality among battle casualties in this war, in comparison with previous wars, has been materially reduced. Many factors played a part in this accomplishment, including the efficient use of personnel and the development of new therapeutic agents.

During the past year improved facilities for the management of amputations were developed. Five amputation centers were established and staffed with orthopedic surgeons and personnel skilled in making artificial limbs and in teaching their use.

The separation of blood plasma into its various components led to the development of fibrinogen and thrombin which have been found to have practical uses in surgical conditions. Thrombin and fibrin have been of particular value as a hemostatic agent in brain surgery. Red blood cells, obtained as residue from the processing of blood plasma, were found to be effective in restoring patients' hemoglobin level and red blood cell count. Accordingly, arrangements were made with the American Red Cross Blood Donor Service to supply red cell solutions to all Army hospitals located near donor centers.

Experience proved that whole blood, when available, was the most effective agent in the treatment of the vast majority of battle casualties. As a result of reports from surgical consultants in overseas theaters indicating the great need for whole blood in addition to plasma, equipment and facilities for the procurement and administration of whole blood were perfected.

Studies of battle wounds showed that despite the great changes wrought in ordnance equipment, particularly in the development of high explosives, little change had occurred in the distribution of wounds throughout the various regions of the body. Experience in the North African theater revealed that about 80 percent of the

wounds were caused by high explosives and only about 20 percent by bullets.

In the field of neurosurgery, advances were made in the repair of skull defects with tantalum plates and new methods developed in the management of peripheral nerve injuries. In the latter, tantalum foil and tantalum wire were especially useful.

Gas gangrene continued to be a serious problem.

Reconditioning

A well-balanced program of physical, educational, and occupational reconditioning for convalescent patients in all ASF hospitals was established during the fiscal year. The objectives of the program were (1) to utilize the otherwise wasted time of recovery in profitable pursuits, (2) to return men to duty in the best possible state of physical and mental fitness, and (3) to return those unfit for duty to their homes better informed, better oriented, and better equipped to carry on their daily lives despite handicaps. Special programs and facilities for the blind and deaf were also provided.

Throughout the reconditioning program emphasis was placed upon measures to hasten recovery. As soon as possible, bed-ridden patients participated in convalescent activities designed to restore morale and stimulate interest. Later, when patients no longer required hospitalization, they were removed to barracks-type buildings, clothed in duty uniforms, and treated as soldiers. Physical fitness and military education were stressed at this stage of convalescence.

Educational reconditioning was emphasized, since physical reconditioning depended upon proper mental attitudes. Educational activities were designed to inculcate in soldiers the desire to return to duty. Therefore, military subjects—presented through reading, study, lectures, films, and discussions—were presented in an attempt to give patients a clear conception of the nature of the enemy and why we must fight this war. Subjects of historical and cultural interest were also presented.

A thorough study of physical reconditioning was made in relation to patients with varying degrees of disability. Gymnasia for certain general hospitals were built and athletic equipment and supplies procured. Occupational therapy was carried out as an adjunct to medical treatment. In this connection, remedial occupational devices were provided to aid in the restoration of function to disabled joints and muscles. Work of prevocational value was stressed, including printing and graphic arts, mechanical and blueprint drawing, radio and electrical construction, and photography.

Special rehabilitation of the blind became the responsibility of the Medical Department on 8 January 1944, following a series of conferences of a special committee appointed by the President. Two general hospitals were designated for this purpose. A convalescent hospital was also established for the personal, social, and prevocational training of the blind. About 119 blind cases had been treated by 30 June 1944.

In the three general hospitals for the treatment and rehabilitation of the deafened, special facilities were provided, equipment procured, and outstanding teachers engaged. About 900 patients were reha-

bilitated, more than half of whom were fitted with hearing aids. Men were returned to duty or discharged in an average of 8 weeks equipped in attitude and compensatory skill to carry on successfully despite deafness or impaired hearing.

Dental Service.

When dental standards for induction into the Army were lowered on 15 October 1942, dental facilities and personnel in the Army faced a new load. Many inductees who had received little, if any, dental service as civilians required extractions and extensive dental treatment once they were in the Army. Every effort was made to insure that each soldier going overseas met minimum dental standards for health. The burden placed upon dental officers at Army posts throughout the United States was only met because increased personnel, supplies, and equipment were made available to the Dental Corps. Even with these increases, it was often necessary for dental teams to use the same facilities for two or even three 8-hour shifts per day. Sufficient specialists were available to perform all special types of dental care required during the year.

More than 1 million dentures were needed to replace faulty teeth. In order to meet this demand, laboratories were established in each post of 10,000 men in addition to central dental laboratories. When these facilities were unable to provide the required number of dentures, civilian laboratories were also used.

During the fiscal year 1944 there were 3.5 fillings per man, an increase over the year before of more than 40 percent. In addition, one tooth was replaced for each man in the Army, an increase of 250 percent.

The number of dental officers and technicians in overseas theaters kept pace with the transport of troops. Mobile dental laboratories and mobile dental operating units were developed for service in advanced areas.

Veterinary Service

The Army Veterinary Service in the calendar year 1943 inspected over 7 billion pounds of meat, of which over 500,000,000 pounds were for the Navy and other agencies. This was approximately 100 percent more than in 1942. Of the total amount, 350,000,000 pounds were rejected for failure to meet specifications and 40,000,000 pounds were rejected because of unsanitary or unsound conditions. Inspection at point of origin which was continued throughout the year, proved advantageous to both the Army and contractors. Transportation was conserved and expenses and difficulties incident to replacement of unsuitable products were markedly reduced.

Eighteen veterinary officers and two enlisted technicians were assigned at the request of the War Food Administration to conduct inspection of establishments required to set aside for government purchase at least 50 percent of the products of high quality beef cattle.

Specifications were developed during the year covering many food items procured for overseas shipment to reduce losses and minimize

deterioration incident to shipping, handling, and storage under adverse climatic conditions, and also to conserve shipping space. In overseas localities where local supplies were utilized, the Veterinary Corps prescribed sanitary measures and enforced them by complete inspection service.

Each soldier stationed in the United States during the year was furnished one-half pint per day of fresh or reconstituted milk. Where fresh milk was available, the use of reconstituted milk was not encouraged. To provide suitable fresh milk to the camps located in areas where the supply was inadequate, pasteurized milk packaged in quart paper containers was shipped to them from localities where the supply was adequate.

To protect the health of Army animals, approximately 710,000,000 pounds of forage were inspected. Medical equipment and supplies required for the treatment of dogs were procured, and a standard ration was in development at the end of the year.

The health of all Army animals was good. Use of vaccines prepared in the Army Veterinary School prevented the occurrence of some of the more important infectious diseases. For the fifth year there was not a single case of infectious equine encephalomyelitis among Army horses and mules although many of them were in areas where there was a high incidence of the disease among civilian animals. Also there was not a single case of rabies among Army dogs, all of whom were vaccinated against that disease, despite its widespread incidence throughout the United States.

HEALTH OF THE ARMY

The health of the Army in the continental United States remained very satisfactory during the fiscal year 1944, with admissions on account of disease and injury at about 725 per 1,000 men per year, compared with 825 in 1943 and 790 in 1942. In medical records, an admission means 24 hours or more lost from duty under medical care. In 1944 there were 725 confinements to quarters or hospitals for every 1,000 men in the Army in the United States.

The noneffective rate for the Army in 1944 was estimated to be somewhat lower than in 1943. The reported rate of 37.7 men per 1,000 was higher than the 33.5 for 1943 because of the inclusion of time lost from military duty by men evacuated from overseas. From 10 to 15 percent of the time reported lost during 1944 by patients in the United States could be attributed to patients evacuated from overseas. The noneffective rate measures the proportion of soldiers absent from military duty at any one time because of medical attention. The lower rates in 1944 indicated the satisfactory health status of the Army in this country, especially when one remembers that the men most physically fit were those sent overseas.

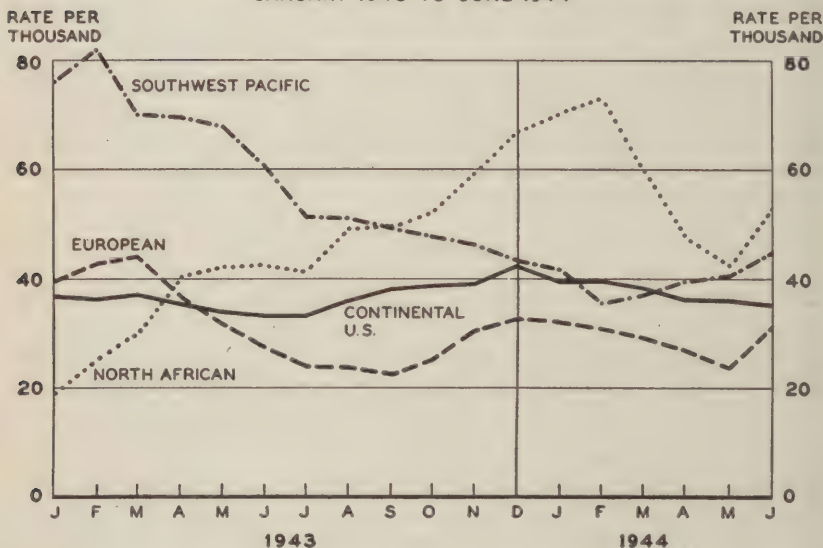
Death from nonbattle causes in the United States was lower at the end of the year than at any time in the past 2 years. The peak point as usual occurred in the winter. Newly inducted men appeared to be subject to higher morbidity from both infectious disease and injury than men who had served for some time.

Despite a sharp outbreak of respiratory infections in December 1943, the annual admission rate from colds, influenza, and the like for the fiscal year 1944 was only about 190 per 1,000, compared with 275 for the preceding 12-month period. Practically all of the decrease in morbidity from disease was accounted for by lower admissions from respiratory causes. Morbidity from pneumonia was about 30 percent lower, with atypical pneumonia comprising a higher proportion of the total pneumonia cases.

The incidence of measles, mumps, and scarlet fever was appreciably lower than in 1943. Thus the 1944 admission rate from measles was 3.0 per 1,000 or about 70 percent under that for 1943; from mumps it

CHART 34 NONEFFECTIVE RATE

CONTINENTAL U.S. AND SELECTED OVERSEAS THEATERS
JANUARY 1943 TO JUNE 1944



was 4.3, a decline of more than 50 percent; and from scarlet fever it was 2.1 or 25 percent lower. Morbidity from meningitis in 1944 was 0.7 per 1,000 or only about half that experienced during 1943.

Morbidity from venereal disease, excluding cases contracted prior to entry into active service, was at a slightly higher level during the fiscal year 1944 than in 1943, the respective annual admission rates being 28 and 26 per 1,000. Admissions from gonorrhea, which accounted for about 75 percent of the total morbidity from these causes, were about 15 percent higher. There was little change in the admission rate from syphilis, which accounted for about 20 percent of all venereal disease cases. Because of the induction into the Army of increasingly large numbers of men with venereal disease, the admission rate for cases contracted prior to entry into active service rose from 29 per 1,000 during 1943 to 37 during 1944.

Among the more difficult problems confronting the Medical Department of the Army were neuropsychiatric disorders. The admission rate from these causes increased from about 20 per 1,000 strength during 1943 to about 30 in 1944. This change reflected to some extent the more intensive efforts made to detect such disorders with resulting increased admissions during reconsideration of the physical fitness of some enlisted men.

Morbidity from diarrhea and dysentery increased from 9 per 1,000 during 1943 to about 12 in 1944. The indications also are that morbidity from rheumatic fever was at a higher rate in 1944 than in 1943. The annual admission rate from malaria acquired in the United States remained at the low figure of 0.2 per 1,000. The number of malaria cases originally acquired overseas and reported in this country upon relapse has increased steadily as larger numbers of men return to the United States from malarious areas overseas. Those cases account for practically all malaria patients in hospitals in the United States. Tuberculosis morbidity exhibited a slight downward trend and the rate was at about 1.0 per 1,000 in 1944.

Partly as a result of efforts to reduce accidents, the rate of admission from injury, which had shown a sharp decrease in 1942 from the high level prevailing in 1941, registered a further small decrease during the fiscal year 1944 compared with 1943. The rate of about 75 per year per 1,000 strength reported for 1944 indicated the frequency of injuries for which time was lost. Since the average duration of hospitalization for such cases, however, is materially longer than that of disease admissions, the relative importance of injuries as a cause of noneffectiveness is not fully measured by their admission rate. The problem of injuries among military personnel was considered sufficiently serious to warrant the inauguration in the spring of 1944 of a new safety program.

The death rate from all causes for the fiscal year 1944 was estimated at about 2.8 per 1,000 strength or slightly higher than the corresponding rate of 2.5 in 1943. This rise resulted from an increase in the mortality from injury from about 1.8 in 1943 to 2.3 in 1944. The increase was partially offset, however, by a decline in the death rate from disease from 0.7 per 1,000 in 1943 to 0.5 in 1944. The extremely low rate from disease is without parallel in history, testifying to the excellent medical care given men in the Army.

Health of the Army Overseas

With the growing strength of troops overseas and with the increase in the combat activity of most theaters, health problems overseas increased in importance.

On the basis of incomplete reports, it appeared that the annual admission rate from disease, from nonbattle injury, and from battle casualty for our overseas troops during the fiscal year 1944 was approximately 925 per 1,000 or about 27 percent higher than the rate for troops in the United States. Battle casualties accounted for about 3.7 percent of the total overseas admissions.

Morbidity from disease varied from the extremely low rate of about 330 per 1,000 in the Central Pacific to about 1,080 in the Middle East

and about 1,150 in the South Pacific, and averaged close to 775 for all overseas troops. That was about 20 percent higher than morbidity rates in the continental United States. The North African, the Southwest Pacific, and the China-Burma-India theaters all experienced admission rates of about 900 per 1,000. The European theater reported a rate of about 650 per 1,000 or substantially the same as that in the United States. The incidence of respiratory disease was higher in Europe than in the United States.

Morbidity from nonbattle injury varied from a low of about 80 per 1,000 in the Central Pacific to about 160 in the South Pacific, and averaged about 120 for all overseas troops, or almost 60 percent higher than in the continental United States. In the Southwest Pacific the injury rate was almost as high as in the South Pacific. The rates for the North African and Middle East theaters were estimated to be in the neighborhood of 130 per 1,000, while those for the European and the China-Burma-India theaters were both under 100.

The admission rate from battle casualties (that is, those wounded in action, excluding killed in action) reflected to a marked degree the proportion of total strength engaged in combat as well as the intensity and character of the fighting. In the North African theater where combat activity on a fairly large scale was more or less continuous throughout the fiscal year, the annual admission rate from battle casualties was estimated at 110 per 1,000 total strength; that rate, however, was only about 85 percent of that from nonbattle injuries. In the South Pacific theater, where combat activity was more sporadic, the battle casualty rate was estimated at 25 per 1,000, only about 15 percent of the admission rate from nonbattle injuries. In the Southwest Pacific and the China-Burma-India theaters the rate was estimated at about 10 per 1,000. Data were not available at the end of the year on the battle casualty rate for the invasion of the Normandy coast; but excluding that operation, the casualty rate for the European theater, reflecting air operations only, was about 6 per 1,000.

While it is difficult at this time to determine exact fatality rates, it seems reasonable to state that the current fatality experience is much more favorable than the rate in World War I.

The high morbidity from disease in certain overseas theaters presented serious problems. The high sick rate in the South Pacific theater resulted from the high malaria rate (over 275 per 1,000 per year) and from dengue (about 25). The morbidity from malaria in New Guinea was much lower than in the South Pacific, but the rate from dengue was considerably higher; for the entire Southwest Pacific theater the rate from malaria was materially lower than in the South Pacific. The incidence of diarrhea and dysentery, however, was somewhat higher in the Southwest Pacific (about 60) than in the South Pacific. Both in the South Pacific and in the Southwest, skin infections accounted for a substantial number of admissions.

Malaria admissions in excess of 100 per 1,000 per year were reported from the Middle East and the China-Burma-India theaters. Both theaters also reported extremely high incidence of diarrhea and dysentery (about 150 per 1,000), and of sandfly fever. Dengue fever was especially prevalent in the China-Burma-India theater.

Diarrhea and dysentery, with an admission rate of about 70 per 1,000, and malaria, with one of about 65, were both important causes of morbidity in the North African theater. Venereal diseases, however, with a rate exceeding 80, was probably the most serious problem. The control of these diseases proved to be particularly hard in Italy. A number of outbreaks of infectious hepatitis also caused some concern, and trenchfoot was a troublesome problem in the front lines

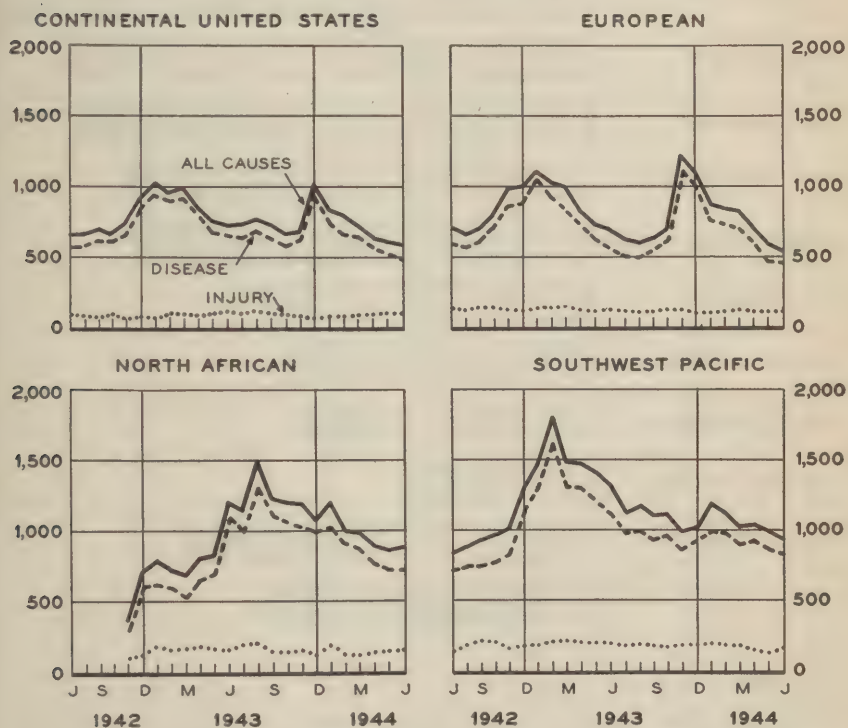
CHART 35

MORBIDITY FROM NON-BATTLE CAUSES

CONTINENTAL UNITED STATES & SELECTED OVERSEAS THEATERS

FISCAL YEARS 1943 AND 1944

ANNUAL ADMISSION RATES PER 1,000 STRENGTH

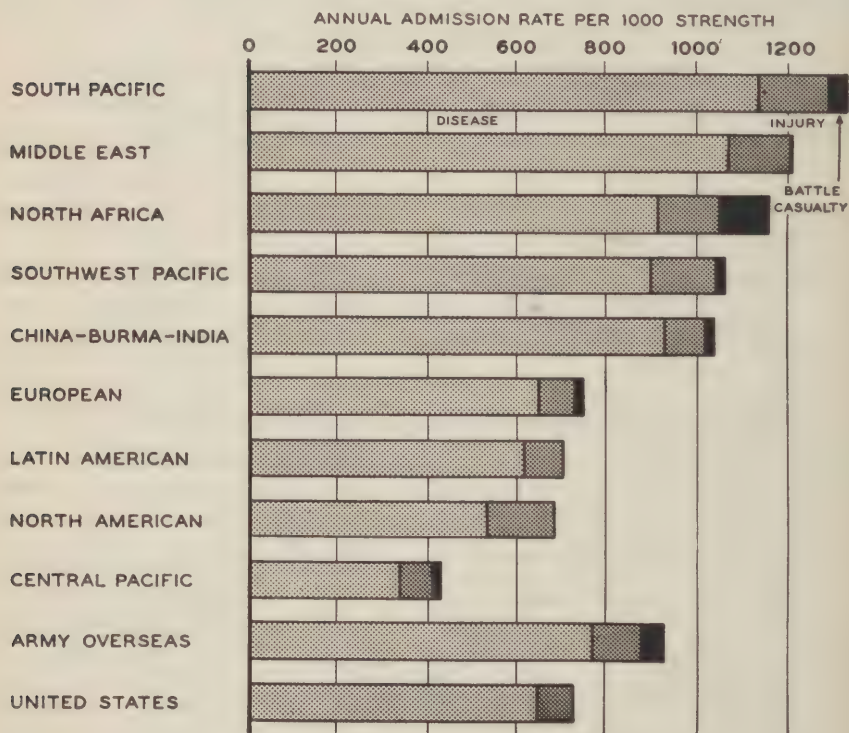


during the winter and spring months. Because of the effectiveness of the preventive measures taken, however, only a few cases of typhus were reported among Army personnel in the theater, even though the disease was endemic in North Africa and occurred in epidemic form in Naples toward the end of 1943.

The death rate from all nonbattle causes overseas was estimated at about 3.7 per 1,000 per year, which was about a third higher than for

the Army in the United States. The overseas rate from disease of 0.5 per 1,000 was the same as the very low one recorded in the United States. The annual mortality rate, however, from nonbattle injuries, estimated at 3.2 per 1,000, was markedly higher than in the United States, reflecting to a notable extent numerous aviation fatalities.

CHART 36
MORBIDITY RATES FROM ALL CAUSES
 UNITED STATES AND OVERSEAS THEATERS
 1943-1944



Miscellaneous.

The Medical Department Prisoner Liaison Unit assisted during 1944 in clarifying the Articles of the Geneva Convention of 1929 pertaining to sick and wounded prisoners of war. The unit interviewed sick and wounded German and Italian prisoners to enable it to either refute or substantiate complaints made to Switzerland or the International Red Cross about hospital service. Medical officers and sanitary personnel of enemy powers detained in the United States were assigned to serve their own nationals, thus relieving United States medical personnel. Attempts were made to establish a centralized

pool of enemy medical and sanitary personnel. The unit assisted in initiating steps for repatriation of such medical personnel and permanently disabled prisoners of war as was possible by reciprocity.

In accordance with Public Law No. 350, Seventy-eighth Congress, approved on 22 June 1944, plans were made to incorporate the Army Nurse Corps into the Army of the United States. Although founded in 1901, the Corps only at this time attained full military status.

Chapter 11. ENGINEERING SERVICE

The war construction program in the United States was virtually completed during the fiscal year 1944. In the previous fiscal year the volume of planned construction had risen from 7.7 billion dollars to 9.6 billion dollars while the work in place had increased from under 4.5 billion dollars in value to 9.2 billion dollars. For the fiscal year 1944 the value of work placed amounted to about 810 million dollars and planned construction increased by less than one-third of the expansion in the previous fiscal year.

CHART 37

WAR CONSTRUCTION UNDER CORPS OF ENGINEERS

FISCAL YEAR 1944



The steady decline in construction activity is shown by the value of the work placed each month during the year. In July 1943, construction activity added 161 million dollars of capital plant to War Department facilities. In June 1944, construction activity added 32 million dollars to the capital plant. The general downward trend in work placed is shown in the accompanying chart. The work placed for the second 6 months of the fiscal year was less than one-third of that placed in the first 6 months.

Of the work placed during the fiscal year 1944, 46 percent was for Air Forces fields and depots, 18 percent for industrial facilities, and another 18 percent was for command installations of ground and service troops. About 7 percent of the total was for storage and shipping facilities.

The decline in construction activity was paralleled by an increasing decline in the number of persons employed on construction projects. In July 1943, there were 244,000 persons working on War Department construction activities. In June 1944, this number had been reduced to 56,000, a decline of about 80 percent.

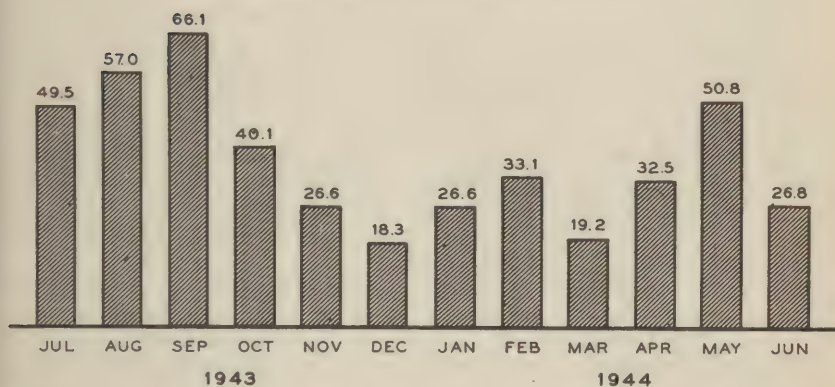
New construction authorized in 1944 totaled 447 million dollars. The month-by-month trend in new construction authorizations is shown in chart 40. In the second 6 months of the fiscal year 40 percent of new work authorized was for Air Forces command installations, and another 40 percent was for industrial facilities.

CHART 38

WAR CONSTRUCTION, FISCAL YEAR 1944

WORK AUTHORIZED FOR CORPS OF ENGINEERS

(ESTIMATED COST IN MILLIONS OF DOLLARS)



Controls over approval of new construction projects were made more strict during the year. Until 31 December 1943, division engineers under the Chief of Engineers had authority to approve miscellaneous new construction projects costing up to \$40,000. Other projects were approved by the Chief of Engineers. From December to March the Chief of Engineers approved all projects. In March 1944, ASF Circular 78 provided that all requests for new construction (exceeding \$1,000 in cost) within the Army Service Forces had to be personally approved by the chief of a technical service or by the commanding general of a service command. Requests for industrial construction were submitted to the Production Division, ASF, and requests for command construction to the Chief of Engineers. The approval of the Commanding General, Army Service Forces, was then required before new construction could be authorized. New construction to be performed by the Corps of Engineers for the Army Air Forces was approved by the Commanding General, AAF. This highly centralized procedure was expected further to curtail the volume of approved construction.

The Chief of Engineers gave careful attention during the year to the enforcement of the directive for wartime construction which was jointly issued by the War and Navy Departments and the War Pro-

duction Board in 1942. Limitations upon types of materials which might be used in construction projects were strictly observed. Every possible effort was made to convert existing facilities to needed use rather than to construct new facilities.

Construction for the Air Forces during the fiscal year 1944 included expansion of runways to accommodate large bombers, some new housing facilities for the Women's Army Corps, and some 3.4 million additional square feet of storage space, of which two-thirds were in warehouses. Deep-water docking facilities were built at Alameda, Calif. Over 1,000 flexible gunnery trainer installations were constructed at 48 airfields. Special engine-testing facilities were built at an air depot, and a climatic hangar and test room at an airfield. New modification centers were constructed at 2 places in Oklahoma, and 6 existing modification centers were expanded to provide new hangars, airplane storage and working space, and additional needed facilities. Eight new large assembly plants were completed, and a new plant was built for the manufacture of a special type of propeller.

New construction for ground forces installations included housing for 17,500 enlisted men, for 11,000 members of the Women's Army Corps, and for 32,000 prisoners of war. Facilities at general hospitals were expanded to provide an additional 7,600 beds. Included among storage and shipping installations were 5 processing and boxing plants, built for expediting shipments of supplies overseas, and 19 new piers completed at ports of embarkation. Some additional storage space, including cold-storage facilities, were constructed on the west coast. New railroad holding yards capable of storing 2,800 railway cars were built during the year.

The passive protection program in the United States was terminated in November 1943, when the strategic situation indicated that there was little reason to fear air attack upon this country. Nearly 40 million dollars had been spent in providing camouflage and other measures to conceal essential production plants and other vital installations in the United States.

The construction program for new seacoast batteries and the modernization of existing batteries was practically completed during the fiscal year. The program was reduced somewhat by direction of the War Department so that the total cost came to approximately 88 million dollars.

The Chief of Engineers investigated and recommended certification of about 181 essential access road projects during the year, involving an aggregate cost of 14 million dollars. In the preceding year some 400 access road projects were completed, costing about 50 million dollars. Also in 1944, 44 strategic and other Federal aid road projects, involving an estimated cost of 8.5 million dollars, were recommended by the Chief of Engineers for improvement as essential to the war effort. In the previous year the number of such recommendations totaled 500, at a cost of about 100 million dollars.

In 1944, 23 munitions plants costing over 500 million dollars were completed. Ten of these plants, and, in point of cost, 82 percent of the total, were for the manufacture of explosives. Some 14 million dollars in construction was spent during the year to convert plants from one type of war production to another. A large part of the production equipment and piping of two powder plants no longer in operation was

removed for use in other munitions plants. Before dismantling operations could begin, deposits of explosives materials which had accumulated on the ground and in buildings and equipment were removed. In consequence, all dismantling was completed without a single instance of fire or explosion.

Construction Outside the United States

Construction outside the United States directly under the Army Service Forces included the Alaska Highway, Pan-American Highway, the Canol project, airports for the Air Transport Command in western Canada and Alaska, and miscellaneous supply projects in the northwest.

Gravel surfacing of the Alaska Highway from Dawson Creek in British Columbia to Big Delta, Alaska, was completed during the fiscal year. At the same time, all but a few of the temporary bridges were replaced by structures of a permanent or semipermanent nature. By 30 June 1944 the Alaska Highway was in excellent condition and was being maintained to fulfill existing military requirements.

The Pan American Highway was completed to standard condition through Salvador, and an all-weather road was completed through Guatemala. In addition to the completed stretches in Honduras and Nicaragua, a supplemental road was finished so that it was possible to travel from the Mexican Border to Costa Rica over the new highway. Because of the favorable strategic situation in the Caribbean area, further construction on the highway by the Corps of Engineers was terminated in October 1943.

The installation of approximately 1,580 miles of pipe line from Skagway to Whitehorse and up and down the Alaska Highway was completed during the year. Pumping stations and storage facilities, as well as access roads, communications systems, housing, emergency flight strips and other facilities were installed for operational purposes along the route of the pipe lines. The refinery at Whitehorse and the pipe line from the Norman Wells fields to Whitehorse were also completed. Several air fields and weather stations were completed in eastern Canada for the North Atlantic ferry route while others were completed in the Caribbean and South American countries for the South Atlantic ferry route. Air facilities in western Canada were expanded during the year. Other construction facilities in western Canada and Alaska, such as docks and wharves, rail facilities, flight strips, rest camps, and maintenance stations, were completed during the year.

REAL ESTATE

In 1944 the War Department reached the virtual end of its military land-acquisition program. No further large-scale acquisitions for the prosecution of the war were contemplated.

During the fiscal year a total of 3,903,869 acres were acquired in the United States, bringing the sum total of all acreage acquired since 1 July 1940 to 22 million acres. Of the new land acquired in the past year, about 26 percent was purchased or condemned from private owners; the other 74 percent was obtained by transfer from other Federal agencies. The new land was required to expand several exist-

ing air fields and to provide new modification centers and storage facilities for the Army Air Forces. Other land was used for storage depots, hospitals, and industrial facilities of the Army Service Forces.

Additional progress was made during the year in expediting disbursement of funds to land owners following the streamlined system developed in fiscal year 1943. By the end of the year payment had been completed on 75.6 percent of the 76,204 tracts under option by the War Department or in process of condemnation. Partial payment had been made on another 6 percent. Ninety-four percent of the total amounts obligated for the purchase of land had been disbursed. Total disbursements for land by the War Department since 1 July 1940. amounted to \$315,220,029 on 30 June 1944.

A satisfactory agreement on price was reached in approximately 90 percent of all real estate transactions. Landowners were advised to await condemnation proceedings if they were not entirely satisfied with Government appraisal of land values. When condemnation proceedings were instituted, 100 percent of the appraised value was deposited in court and the owner was assisted in withdrawing this money without prejudicing his right to contest the Government evaluation.

The procedures developed during the fiscal year 1943 for expediting land acquisition included:

- a. Use of aerial surveys.
 - b. Reduction in the time required for title search.
 - c. Speed-up in payment including payment on the basis of a preliminary certificate of title.
 - d. Use of title certificates and title insurance policies.
- These procedures further demonstrated their usefulness in 1944.

Leases.

On 30 June 1944, the Chief of Engineers held 19,465 active leases on behalf of the War Department. This was almost double the number of active leases on 1 July 1943. The annual rental value of all leases did not increase, however, during the year. On 1 July 1943, the annual rental paid on active leases was 53.8 million dollars. On 30 June 1944, the annual rentals paid by the War Department totaled 50.2 million dollars.

That the number of leases increased at the same time that the annual rentals declined was explained by War Department rental policy during 1944. As troops went overseas, War Department installations located in leased facilities were moved as rapidly as possible into Government-owned buildings. At the same time, as new facilities were required for hospitals, redistribution centers, or for maneuver purposes, existing facilities were rented instead of new ones constructed. In the month of April 1944, while 837 new leases were being executed, 1,070 leases were terminated. In other months the number of new leases exceeded the number terminated.

During the year a number of hotels were leased on the west coast to serve as redistribution centers while additional land was retained for bombing ranges and as maneuver areas for the Army Ground Forces. Some storage facilities were leased by the Army Service Forces and other facilities were leased to serve as reconditioning centers for patients.

REPAIRS AND UTILITIES

Army facilities from 1940 to 1944 were built with the intention of causing the least possible dislocation to the civilian population in surrounding communities. Accordingly, civilian health and welfare were not menaced by overloading local utility systems with extraordinary demands for Army services.

In order to safeguard the lives and health of soldiers on a post, the War Department built all necessary plumbing, heating, and sanitation facilities. Each post had adequate water service, sewage disposal plants, garbage and rubbish disposal, and mosquito control. All posts had adequate heating, including steam supply for laundries and kitchens. Fire protection facilities were provided, including automatic protection in hospital areas. Cold storage facilities and ice-making plants were built for the preservation of foodstuffs. All these facilities, as well as roads, railroads, warehouses, and barracks, had to be maintained in satisfactory operating condition.

At 694 posts, 482 subposts, and 3,448 outposts, appropriations for maintenance and repair from 1 July 1940 to 30 June 1944 amounted to \$1,800,000,000. Of this amount, over \$817,000,000 was appropriated for the fiscal year 1944. Obligations for maintenance and repair in 1944 were one and one-third times those for 1943 and two and a half times those for the fiscal year 1942.

The job of the post engineer in keeping all facilities in operating order was scarcely an easy one. He had to choose between the use of critical materials and less manpower, and the use of less efficient materials and more manpower. He had constantly to fight rust, erosion, and decay. He had to purchase most of his supplies in his own area from fast-dwindling stocks. Frequently, second-hand supplies, tools, and machinery were all that were available. Improvisation was a constant necessity. To help him in his job, the Chief of Engineers during the year prepared pamphlets and other materials for his guidance and for the training of his personnel. For example, film strips on "Care and Maintenance of Boiler Plants" were prepared and distributed. Training was given personnel who maintained gasoline systems at airfields. Preventive maintenance schools for refrigeration and ventilation mechanics were conducted.

During the year the Chief of Engineers began to collect systematic data from each service command on the costs of repair and utilities operations. Comparisons were made of these costs in the various service commands. Where wide divergencies were discovered special inquiry was made and steps taken to bring costs more in line with those of other commands. The variations in unit costs among the service commands for the fiscal year 1944 are shown in the accompanying table.

Altogether, the Chief of Engineers was able to save approximately 145 million dollars by cost control, technical inspections, and uniform standards of maintenance. The amount of electricity per man used at posts, camps, and stations was reduced from 11 to 3 percent. Thousands of metal smokestacks which were badly corroded were replaced with new stacks built from noncritical materials. Some 22,000 boilers in 8,000 boiler plants were treated to reduce scale-forming metals which should save nearly 5 million dollars in lowered fuel consumption and lowered replacement demands. Gas-burning equip-

Variations in unit posts for repairs and utilities operations among service commands

1 JULY 1943-30 JUNE 1944

Feature	Unit of measure	Average cost	Highest cost		Lowest cost	
			Cost	Service command	Cost	Service command
Permanent buildings	Sq. ft.	0.067	0.116	MDW	0.043	5th.
Cantonment buildings	Sq. ft.	.070	.094	2d	.057	8th.
Theater of operations buildings	Sq. ft.	.071	.122	6th	.055	5th.
High type bituminous roads	Sq. yds.	.044	.086	2d	.023	6th.
Fire personnel	No. emp.	1,855.00	2,065.00	MDW	1,713.00	2d.
Water mains	Lin. ft.	.030	.045	1st, 2d	.021	5th.
Purchased water	1,000 gal.	.100	.159	1st	.079	9th.
Purchased electricity	Kw.-hr.	.011	.014	1st	.010	8th.
Purchased gas	Therms	.023	.158	3d	.017	9th.
Central heating—operation	Tons fuel	4.820	6.149	MDW	3.626	8th.
Fuel storage and distribution	Tons issued	.832	1.300	6th	.487	5th.
Power operated equipment	Dollar value	.181	.211	MDW	.108	1st.

ment was constantly inspected and adjusted to reduce cost. Temperature control equipment was installed in hospital wards and in other buildings to reduce fuel consumption. Ammonia nitrates, which were surplus to the Ordnance Department, were processed and used as fertilizer for ground maintenance in two service commands. Over 387 sewage disposal plants were operated with no pollution cases and only a few nuisance complaints.

Additional exits and exit ramps were built in hospital recreational buildings to aid in the removal of patients in case of fire. Procedures for the operation and maintenance of refrigeration and air conditioning systems were standardized. All utility contracts were reviewed during the year, with a general reduction of about 3 percent in the cost of electricity for the War Department.

The maintenance of airfield pavements had priority over all other types of maintenance work at airfield installations. Scheduling repairs at airfields to avoid conflict with flying operations was a serious problem. Some preventive maintenance had to be deferred for this reason. During the winter, an adequate supply of heavy duty snow removal equipment was provided airfields to insure their uninterrupted use.

In disposing of wastes, a reduction in the use of coal by approximately 800 tons per month was realized, while operating personnel was reduced by 500 men. The necessity for road maintenance was lowered during the year by increased restrictions upon the routing of armored vehicles.

In order to reduce fire prevention costs, equipment was spread out over larger areas and full-time fire-fighting personnel were greatly curtailed. Enlisted personnel performing other duties on a post were trained to serve as auxiliary firemen in the case of an actual fire. At the same time, increased emphasis was placed upon fire prevention and upon the better use of existing fire-fighting equipment. Despite the hazards of protecting Army property consisting of highly inflammable structures and the reduced protection program, military fire losses in the first 11 months of the fiscal year 1944 totaled only 20 million dollars, which was about 35 percent under comparable civilian fire losses.

During the fiscal year, continued attention was given to the development of techniques for controlling fire damage caused by aircraft accidents. Approximately 200 large crash trucks were distributed during the year to various airfields. They were supplemented by smaller and more mobile types of crash and fire trucks. Research developed more suitable clothing for fire-fighting personnel, especially for gaining access to the interior of crashed airplanes.

In order to supplement routine training in fire-fighting techniques at posts, advanced schools were organized and conducted during the year. These developed new techniques, improved equipment, and promoted standardized practices for fire-fighting personnel at posts. A school in each service command lasted 1 week and was repeated 10 times in order to reach all civilian and enlisted fire-fighting personnel.

Even though reductions were occurring in size of the armed forces maintained in the United States, utilities expenditures could not be lowered correspondingly. Maintenance and fire protection continued, awaiting the eventual disposition of Government properties.

Chapter 12. COMMUNICATIONS AND PHOTOGRAPHIC SERVICES

By 30 June 1944, the Army Communications Service was the backbone of a signal communications system unrivaled in the annals of warfare. Fanning out from the War Department Signal Center in Washington, the network criss-crossed the Nation and reached into every major overseas headquarters from which United Nations armed forces were operating. Messages relating to all phases of the war effort were transmitted with unprecedented speed to coordinate blows against the enemy. As an example of the extent and speed of the service, a message was sent around the world, through five relay centers, in 3½ minutes during an observance of the Centennial of the Telegraph on 24 May 1944.

D-Day on 6 June 1944, found Army Communications Service ready to handle its additional duties. Despite the tremendous growth in traffic volume and the expanded scope of operations, the Service had overcome obstacles such as critical shortages of wire and radio equipment, and had built up a narrow margin of capabilities. Command traffic to and from General Eisenhower's headquarters moved smoothly on D-day, and overflow facilities were provided the Office of War Information, the press, and the radio for rapid dissemination of invasion news and radiotelephotos.

Control of military operations from the United States was assured during the year by establishing highly secure conference radioteletypewriter channels permitting instantaneous contact between commanders in Washington and the principal theaters. One newly installed circuit proved invaluable, since it enabled the Commanding General of the Army Air Forces to direct from Washington the operations of the Twentieth Bomber Command against Japan.

Perhaps the most important single Army Communications Service development during the year was the conversion of many overseas circuits to radioteletypewriter. These revolutionary facilities permitted the effective use for the first time of standard wire teletypewriters on radio channels, eliminating slow manual methods which required highly skilled operators. The development also made possible the semiautomatic transfer of traffic from wire to radio circuits and vice versa. Thus was created a world-wide single-gage system over which messages flowed with a minimum of delay in handling.

Within this country communications facilities were reorganized into the Army Command and Administrative Network which reduced them to a compact, efficient, and economical pattern, and integrated them with fixed overseas communications. The domestic network was connected for automatic operation with seven principal overseas areas, and was extended by integration of facilities to all service commands

By 30 June 1944 it served 600 domestic Army installations. Substitution of landline for radio circuits released valuable frequencies for overseas use.

Semiautomatic relay equipment and streamlined message-handling methods were instituted in the War Department Signal Center and other major relay centers. The average time to transmit a 50-word message was reduced from more than 40 minutes to 7 minutes. Personnel requirements at the War Department Signal Center were reduced more than 40 percent, and at a major tributary center, more than 60 percent. Wasteful parallel sections of independent networks were absorbed. More than 200 Army-owned teletypewriters were recovered for other use; 460 exchange service stations were canceled. Conversion of traffic to network facilities saved the equivalent of 120 telegraph channels at a value of \$2,000,000.

Special control methods over communications instituted during the year resulted not only in curtailing the rate of growth in leased private line telephone service, but also in reducing the total mileage by 23,696 miles or 14.5 percent. The annual rate of spending was decreased by \$1,250,000. The difference between the controlled mileage and that which would have otherwise resulted was 120,000 miles. This represented a difference of approximately \$5,300,000 per year. Introduction of the foreign exchange plan, by which telephone traffic from 60 switchboards in the New York vicinity was funneled to the War Department switchboard by means of 11 circuits, produced an estimated \$200,000 annual saving. Nation-wide use of these methods will result in a \$1,250,000 saving and will relieve congestion of facilities available to industries.

Immense progress also was made in engineering fields, with "packaged carrier" equipment as an outstanding example. The carrier principle, in which as many as 40 telephone and telegraph messages may be transmitted simultaneously over a single wire circuit was highly desirable for military use, reducing installation time and conserving materials. Its application to tactical use was limited, however, because highly skilled technicians in great numbers were required to assemble and connect the intricate apparatus. A staff of Army Communications Service engineers, assisted by commercial technicians, developed a method of prefabricating the equipment for generalized use and of shipping it with printed instructions so detailed that nonskilled personnel could install it quickly and effectively. Packaged carriers are now in use throughout the world, with tremendous economies in time, personnel and materials.

Specialists trained by the Chief Signal Officer at the plant assembly center in Philadelphia roamed the world building "radio highways of the sky" which enabled military planes to shuttle across oceans and continents with men and matériel for the fighting fronts. The equipment varied from complete radio installations involving huge antenna towers, direction-finders, range beacons, transmitters and receivers, to meteorological stations.

One of the most difficult assignments of the airways communications service was the establishment of a radio network along the North Atlantic ferry route. In addition to climatic and geographic handicaps, the aurora borealis tended to black out communications, and

extreme static noise conditions caused intolerable service interruptions. With the assistance of some of the nation's foremost engineers, Army Communications Service installed 6 efficient stations in 28 days, linking the United States with England by way of Newfoundland, Labrador, Greenland, and Iceland.

Similar projects were installed in other sectors all over the world. In the Southwest sector, mobile radio installations were designed and developed for immediate use upon completion of a landing strip during a strike into enemy territory. Such installations proved their value at Kwajalein and Eniwetok. Within the United States, 1,500 radio transmitters and associated equipment were supplied to airfields during the fiscal year 1944.

Another Army Communications Service milestone was completion of the 2,026-mile telephone line along the Alaska Highway. At the request of the Royal Canadian Air Force work was begun to provide teletypewriter and voice channels to airfields. This project will cost \$2,000,000 and will require 2,900 miles of wire.

Construction also was started on a 2,000-mile wire line between Calcutta and Kunming in the China-Burma-India theater.

A colorful sidelight among Army Communications Service's activities was the provision of communications for the conferences at Quebec, Cairo, and Teheran, permitting the Commander-in-Chief and his party to communicate with Washington at all times from any point along the itinerary. The Quebec conference equipment was installed within 48 hours after its arrival there in trucks. For the other two conferences, complete radioteletypewriter channel equipment and personnel were flown to Cairo and Asmara and the installations were completed in about two weeks. The facilities for all three conferences were used by the Presidential staff as well as by the Army and Navy.

Radioteletype conference facilities were expanded in 1944, and three sets became regularly available at the War Department for direct conference connection to headquarters in the European theater of operations, North African theater, Southwest Pacific theater, China-Burma-India theater, and Persian Gulf Service Command. Two conference terminals in one room in Washington made possible simultaneous conferences with the headquarters of two theaters, while a third terminal, located in a separate room, permitted still another conference to be conducted simultaneously. Radioteletype conferences are also possible between the European theater and the North African theater.

In May 1944, conference facilities were established at the New York Port of Embarkation for use with supply headquarters in England, and at San Francisco Port of Embarkation for use with supply headquarters in Australia. At these conferences questions, answers, directions, and information of all classifications might be directly transmitted and received at the maximum typing speed of the terminal equipment (60 words per minute). Conferences were prearranged to permit interested personnel to be present with pertinent data, thus saving time, assuring mutual understanding and providing a written record of the proceedings. The equipment at ports and overseas supply headquarters was provided as an expeditious means of transmitting ship manifests, priority lists, and similar lengthy messages frequently consisting of five to eight thousand words.

Plans were developed by the joint Army Service Forces-Army Air Forces Communications Control Board to consolidate Signal Corps and airways communications service point-to-point channels in the Caribbean and South Atlantic areas. As a result of the agreements reached, a consolidated command-administrative airways communications network was established. This network consisted of basic radio teletype circuits supplemented by manual radio circuits. Approximately 20 frequencies were saved by the consolidation, and approximately 10 manually operated stations were discontinued.

In collaboration with the Office of the Air Communications Officer, Air Forces requirements were examined carefully to make sure that all were met adequately with improved service, but without waste. During the year the headquarters of two Air Forces were connected to the Army network at Tampa and at San Francisco. Headquarters of the Air Service and Matériel Commands at Patterson and Wright Fields were connected to the network for both domestic and overseas operation. Operational networks were established for the Air Ferrying and Domestic Freight Divisions of Air Transport Command. Arrangements were completed by the end of the year to absorb the headquarters Air Forces systems into the Army network, eliminating parallel services.

Joint communication operations of the Army and Navy were extended materially in 1944. Access to the Army network was provided for the Navy at 5 major Navy centrals, and by the end of the year, approximately 200,000 words a day of Navy traffic were handled over Army facilities. Studies to determine what elements of Army traffic could be handled more economically over Navy facilities were begun.

Because of equipment limitations the United States Navy during the year found it impractical to continue the use of certain radio frequencies assigned to it. The Chief Signal Officer arranged for the Air Forces to confer with the Navy on an exchange of particular frequencies. A new frequency plan was worked out in 1944 for Alaska. This involved negotiations with the Civil Aeronautics Administration, the Navy Department, Pan-American Airways, the Canadian Government, and other agencies. Broadcast stations for United States troops were established on Canadian soil during the year. New radio frequency authorizations were issued in 1,178 instances and revised authorizations were made in approximately 1,200 instances assigning radio frequencies and call letters to ships, ports, domestic guard systems, and other systems.

Arrangements were made during the year for an international radio propagation conference which was held in Washington in April and May 1944, under the sponsorship of the Combined Communications Board. This conference agreed upon coordination of allied activities for radio propagation. A number of new procedures were developed during the past year which were approved by the Combined Communications Board of the United States and Great Britain. These procedures covered combined visual signalling, combined communication instruction, a combined panel system, and changes in combined radio-telegraph procedure and radio-telephone procedure. The combined communications procedures were translated into 13 different languages during the year, thus making combined operating procedures available for signal communications between many different nationalities.

Traffic.

The Army Command and Administrative network traffic load increased more than 500 percent during 1944. The trend in messages handled by the War Department Signal Center is shown in the accompanying chart. The growth in large part resulted from the integration of all War Department facilities into a single system. Although critical shortages of communication equipment, both wire and radio, presented seemingly insurmountable obstacles in building up the message center, sufficient equipment was progressively procured, installed, and placed in service to meet currently effective loads, without at any time impairing the War Department communications.

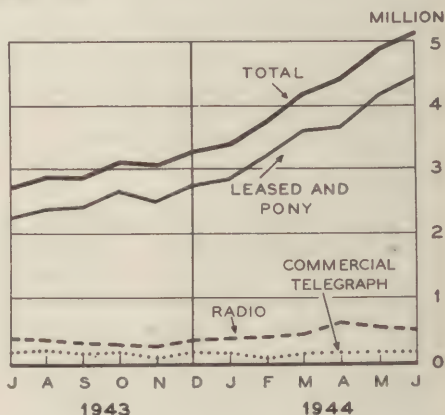
CHART 39

MESSAGES HANDLED*

BY WAR DEPARTMENT
SIGNAL CENTER



* EQUATED TO 30 - WORD
MESSAGES, THE AVERAGE
LENGTH OF COMMERCIAL MESSAGES



Press and news service transmission initiated during the fiscal year 1943, which aggregated some 30,000 words per day at the end of that year, increased to approximately 125,000 words per day during the first quarter, 175,000 words per day during the second quarter, 190,000 words per day during the third quarter, and 215,000 words during the final quarter of the current fiscal year. These services included Office of War Information dispatches to and from theaters of operation, special communiques from theaters of operation, dispatches distributed through Army News Service for military publications such as *Yank* and *Stars and Stripes*, news digests from the State Department, and others of lesser volume and regularity.

Telephoto service for the transmission of visual material, which was confined largely to the United States during the first quarter of the fiscal year, was extended in the second quarter to include Algiers, Brisbane, and London, with an additional station in New Guinea, operated through Brisbane. In the third quarter a second station was set up in London, and additional stations were created in Honolulu and in Italy.

Following satisfactory tests of equipment developed to adapt two-tone teletype channels for picture transmission, this equipment together with radio-telephoto apparatus was shipped by air for installation in India. An officer of the War Department Signal Center-

Telephoto Section accompanied the shipment to complete the installation and train air force personnel in its operation and maintenance. Since installation of radio-telephoto equipment in the War Department Signal Center in June 1942, picture transmissions increased from an average of 30 per week, with approximately 100 prints processed, to a maximum of 601 transmissions during the first week of the Normandy invasion, involving a total of 11,455 prints processed and delivered to the Bureau of Public Relations Branch and to high officers. A representative of the Associated Press stated that the European invasion was the first instance in which pictures of foreign military action were available for publication simultaneously with the news story.

The expeditionary force message service reached a volume aggregating 9,000 messages a month in the first quarter of the fiscal year. This service provided transmission of messages to members of the United States armed forces overseas by commercial communications companies at a flat rate of 60 cents. It was seen that the handling of Christmas and New Years greetings would be beyond the capacities of the commercial communications companies. Consequently, a plan was set up under which the several commercial communications companies handled expeditionary force communications to the maximum capacities of their facilities, and War Department facilities were made available to handle any overflow and assure delivery prior to 1 January 1944. As the result of a survey conducted in all theaters, it was found necessary to give preference to hospitalized and combat troops, to limit messages to one per individual, and to restrict service to messages from foreign points to the United States. On the curtailed basis, an aggregate of 75,000 messages were handled by War Department facilities and a total of 36,000 messages were transmitted from London to the United States by plane as overflow traffic beyond the collective capacities of the commercial communications.

The initiation of offensive operations necessarily resulted in a progressively increasing number of casualty messages which, by mutual agreement between the War Department and Western Union Telegraph Co., were transmitted and delivered exclusively by that company within the continental United States. Because of complaints about irregularities in and nondeliveries of casualty messages, the general matter was drawn to the attention of the Western Union Telegraph Co. during February 1944, together with a request that any necessary action be taken to effect the elimination of all avoidable errors and deficiencies in this service. Joint conferences between representatives of the Western Union Telegraph Co., the Adjutant General's Office, and the Chief Signal Officer set up a comprehensive code of instructions which the Western Union Telegraph Co. agreed to make effective. In addition to issuing and requiring strict compliance with these instructions, the Western Union Telegraph Co. circularized all its offices, and published numerous "stickers," posters, and similar material emphasizing the humane necessity of prompt, accurate, and considerate handling of casualty messages. The number of irregularities dropped precipitately.

Special terminal equipment was installed in Washington and overseas during the year for handling messages of highest secrecy. The

use of these facilities increased steadily, and even greater use was anticipated in future military operations.

The ultra high frequency control system providing the highest possible grade of transmission between the War Department Signal Center and the main transmitting and receiving stations nearby was completed during the fiscal year. This system provided 48 control lines or channels and connected an operating station to remotely controlled transmitting and receiving stations without any wire or cable facilities.

The Army Communications Commercial Agency located in New York City continued in 1944 to handle traffic engineering functions for the Army Communications Service, including the analysis and approval of all TWX and miscellaneous private line teletypewriter facilities in the United States not of national scope. The agency assumed responsibility for providing all Army-owned teletypewriter equipment required for the Army Command and Administrative Network. Because of the scarcity of new teletypewriter equipment, it was necessary to maintain current records and a constant check on all existing installations of Army-owned equipment in order that immediate allocation of any surplus equipment might be made.

Approximately 72,000 miles of leased circuits were added to national teletypewriter networks within the United States. In addition to establishing new stations on the various networks, the work incident to the rearrangement, moves, disconnections and other changes in all existing services required the issuance of many additional service orders. An order procedure was established with the concurrence of the American Telephone & Telegraph Co., whereby standard order forms and serial approval numbers were utilized. This plan was placed in effect in February 1944, and resulted in a monthly saving of 100 dictated and typed letters, a means of accurately checking uncompleted orders and a simplified method for checking bills against orders.

The Army Command and Administrative Network by the end of the year consisted of 17 relay centers; 56 trunk circuits connecting relay centers; 182 tributary circuits, 33 room circuits, and 119 TWX terminations at relay centers. Almost all teletypewriter equipment was Army-owned, except TWX terminations. In 1944 the number of circuits increased from 51 to 153, the number of stations from 105 to 335, and circuit miles from 16,000 to 52,000.

Alaska Communications Sytem

On 1 May 1944, all activities of the Alaska Communications System located in Canada, with the exception of airways facilities, were transferred to the Northwest Service Command.

On 1 July 1943, all telegraphic communication between Seattle and stations in western Canada and Alaska was by means of radio circuits, with the exception of submarine cable circuits between Seattle and Anchorage and leased line teletype operation with Edmonton. With the completion of landline telegraph facilities along the Alaska highway and between Prince Rupert and Vancouver, these radio circuits were placed in stand-by status. The number of stations operated in Alaska declined from 44 to 41 during the year.

ARMY PICTORIAL SERVICE

In 1944 the Army Pictorial Service set up an Overseas Production Section to insure adequate war coverage outside the United States. Although battle actions obviously did not occur under ideal lighting conditions, some first-class photography was received from overseas. Some of it was obtained at great personal risk. Several men were killed and others injured in the course of performing photographic missions.

During the year a system was inaugurated for the handling of still and motion pictures which tended to expedite the return of photographic work from overseas, thus making available photographic coverage while it still possessed the greatest news value. Motion and still pictures received in the United States were immediately sorted and classified and then shown to staff officers, keeping them visually informed of front-line activity. This material served as an aid in training as well as in planning future operations.

The volume of both still- and motion-picture photography received from overseas continued to grow with expanding operations of the Army. Several hundred thousand feet of exposed motion-picture film and several thousand still-picture negatives were received each month. Not only has the volume of photography submitted been constantly on the increase but its quality improved as well.

Among the outstanding events covered by Signal Corps combat photographers operating with combat units or as individual teams were the invasion of and the advance through Sicily and Italy, depicting progressively the invasion of Sicily, the capture of Palermo and Messina, the establishment and holding of the bridgeheads at Salerno and Anzio, the conquest of Naples, the fall of Cassino, the liberation of Rome, and the onslaught up the Italian boot toward the Po Valley. In June 1944 there was full and complete coverage of the amphibious operation and attack upon the Normandy Coast and the fighting beyond. In addition Signal Corps cameramen covered the United Nations' conferences at Quebec, Cairo, and Teheran.

Dramatic as were the events depicted by Signal Corps cameramen in the Mediterranean, equally skilled and vital photographic coverage was obtained in the Pacific and in the China, India, and Burma area. Photographic records of high quality were obtained in the most advanced areas, and adequate coverage was had in the rear areas showing the landing of supplies, the treatment of the wounded, the handling of prisoners, and similar military operations.

The negative film received from all theaters was permanently filed in the film library of the Signal Corps and positive prints were made available to interested parties as directed by the Bureau of Public Relations, War Department. During the month of April 1944 some 292,000 feet of motion-picture film was selected for permanent retention in the Motion Picture Library. This represented more than 90 percent of the total footage received. Various agencies of the Government, production units of the Signal Corps, and commercial companies utilized some 860,000 feet of motion-picture film drawn from the film library during the same month.

Equipment and Pictorial Engineering

Standard photographic equipment was modified during the year to adapt it to conditions met in actual warfare. Nonphotographic equipment also had to be modified for the use of combat photographers. Thus a modified helmet was designed for the use of photographers in combat. It was found that the standard helmet did not permit satisfactory operation of a camera, and a movable visor was placed on the helmet which covered a cut-out portion when the camera was not being used.

The Pictorial Engineering and Research Laboratory Division, in a constant endeavor to improve the quality of photographic equipment and to meet the requirements of combat photography, examined, tested, and shipped overseas approximately 15,000 individual photographic items. It received operating reports from all combat photographic units on the performance of each and every piece of its equipment; it studied the difficulties encountered because of heat, cold, moisture, and dust, and designed and perfected equipment impervious to these adverse elements and conditions.

During 1944 the idea of a War Committee on Photography and Cinematography was conceived and carried out with the cooperation of the Army Air Forces, the Navy Department, the United States Marine Corps, and the United States Bureau of Standards. There was created the first wartime cooperative effort of the photographic industry and of various standard organizations. As a result, by 30 June 1944, 17 standards had been officially approved and published as American war standards. Among these were a number of dimensional standards for 16-mm. film, aperture, and sound-track location, as well as specifications for the processing of 16-mm. motion-picture release prints.

In May a specification was prepared after 5 months of work by representatives of the armed services and by 60 engineers of photographic manufacturers, for the construction of 16-mm. projectors. This specification will result in a single service model projector with complete interchangeability of parts which will be used by all services. A photographic carrier was designed for installation in a jeep and a mobile photographic laboratory was also developed during the year.

Film Production

The Army Pictorial Service in 1944 produced training films for the Army Ground Forces and Army Service Forces, pictures for the orientation, education, and information of the men in the armed forces, pictorial campaign reports, and motion pictures to sustain the morale of war workers on the home front.

As the general over-all training of the Army neared completion, fewer training pictures were necessary to depict basic-training doctrine. The continuous development of new weapons, however, required new pictures to demonstrate their proper use. Even more important was the flow of training films necessitated by changing techniques in the use of existing weapons resulting from combat experience.

Motion pictures were produced either by the Signal Corps Photographic Center or on order from commercial studios. When a motion

picture was requested by the Morale Services Division, the Bureau of Public Relations, the Army Ground Forces, or the Army Service Forces, it was decided whether the approved story could be translated on to film by the use of Signal Corps facilities or whether commercial production would be more advisable.

In general, scripts which were to be produced commercially were transmitted to the Western Division of the Signal Corps Photographic Center, which, after careful analysis of the production problems involved, requested the studio which appeared to be able best to produce the picture to submit a detailed break-down of the cost of production. Motion-picture auditors in the employ of the Signal Corps analyzed the cost of producing each particular scene in order to arrive at a negotiated price with the producer. All major producers refused to derive a profit from their transactions with the Government and in most cases refused to include in the price their studio overhead costs.

In the course of the year the quantity of training film footage produced exceeded all previous totals. Translation, rescoring, and the adaption of commercial pictures to training film needs proceeded at an accelerated pace. The translation of training films into Spanish, Portuguese, and Chinese continued as in the previous year, but in addition there was initiated a program of translating into French and Italian as well.

In spite of greater complexity of training film production, the total elapsed time for the production of training films was substantially cut. Thus, at the request of the Commanding General of the European Theater of Operations, four training films on a radio aircraft detecting set, although these films were of an extremely technical nature, were produced. Prints of all four subjects were available to the theater commander within 60 days after the request arrived.

At the request and under the general supervision of the Morale Services Division, the program of producing pictures for the information, education, and morale of the soldiers continued and improved. The Army-Navy Screen Magazine, first issued in April 1943, continued to meet the regular schedule of two subjects per month. Such productions as the "Battle of Russia," "Battle of China," and "Know Your Ally, Britain" were produced and released. The "Battle of Russia" was made available to the general public through the medium of a release to motion-picture theaters throughout the world by agreement with the Office of War Information and the War Activities Committee of the Motion Picture Industry. A program of so-called "GI Movies" was inaugurated. These programs, running approximately for 45 minutes, were made up in large part of short subjects, translations, song shorts, sport shorts, and newsreels procured through the cooperation of the motion-picture industries. They were released on 16-mm. size film to the troops in all installations overseas and in camps, posts, and stations throughout the zone of the interior.

To meet the requirements of the Industrial Services Division in the Bureau of Public Relations, a series of so-called "Industrial Incentive Films" were produced. During 1944 one regularly scheduled subject each month and from one to two additional subjects of a particularly pertinent and timely nature were scheduled for production, completed, and released. These pictures were aimed directly at workers in war

plants and were designed to help each individual to identify himself more closely with the war effort by showing him how his product helped in actual combat. Toward the close of the year it was conservatively estimated that approximately 6,000,000 workers saw these pictures each month.

Two series of films known as campaign reports were produced at the request of the Bureau of Public Relations. One of these, "Attack! The Battle for New Britain," produced entirely with Signal Corps personnel, depicted the campaign at Cape Gloucester in the South Pacific. "Tunisian Victory" was jointly produced with the British Ministry of Information. On D-day, 6 June 1944, a film produced primarily in England was released, entitled "Eve of Battle."

During the year a series of motion pictures known as Combat Bulletins were initiated to supplement and complement training activities. These pictures presented actual combat experience as photographed in all theaters of operation and were coordinated with the training curricula of the various arms and services. Emphasis was placed upon lessons learned in actual combat with particular emphasis upon leadership, teamwork, and adaption of military knowledge to combat conditions. Staff film reports were another series of secret films reporting combat developments for higher officers in the United States.

Distribution

In addition to the pictures produced, assembled, or procured by the Army Pictorial Service, the need for purely entertainment motion pictures was recognized and met through the generosity of the motion picture industry. The Army was given the right to select any three feature pictures produced by any of the major motion picture companies each week and to obtain an adequate number of 16 mm. prints of these pictures for exhibition to members of the armed forces overseas. Although commercially motion pictures had their greatest value immediately upon release, the motion picture industry made available to the armed forces the pick of its best products before they were shown to the general public.

Because of the tremendous morale value of entertainment pictures, the Army Pictorial Service organized an Overseas Motion Picture Section in 1944 charged with the single mission of selecting entertainment pictures, and of receiving and transmitting the prints to various combat areas overseas. Steps were taken to insure the selection of those pictures which embodied the greatest entertainment values. A board of six officers and two civilians was set up which passed on all feature length pictures selected for overseas shipment. The officers represented the Signal Corps, Special Services Division, and Morale Services Division, Army Service Forces.

The services of the Overseas Motion Picture Service was extended to include not only the Army but also the Navy, Marine Corps, and Coast Guard. Troops of the United Nations at any time stationed in close proximity to those of our own forces were always admitted to the shows. In January 1944, the first pictures were delivered to the International Y. M. C. A. for the purpose of showing the pictures to prisoners of war in Germany.

The Overseas Motion Picture Service exerted every effort to procure and ship an adequate number of 16 mm. projectors to all parts of

the globe. Great ingenuity was displayed by personnel in combat theaters in locating and developing power supplies for the operation of these projectors. By the end of the year over 11 thousand prints of entertainment films had been sent overseas. They were seen by over 30 million soldiers.

The G. I. movies were also distributed overseas. Prints were shipped to all the Overseas Motion Picture Service exchanges, from which they were routed over the same circuit and followed the same channels as entertainment films. The number of prints allocated to each overseas exchange was established in response to substantiated requests from the various theaters of operation.

In the zone of the interior G. I. movies were distributed from New York to regional offices from which the prints were circuited to various posts, camps, and stations lacking 35 mm. projection facilities. When prints of G. I. movies completed their first run circuit, they were shipped on long-term loan to staging areas, ports of embarkation, general hospitals, and convalescent centers. The Army-Navy Screen Magazine, issued semimonthly and exhibited at regular semimonthly periods, was printed on 35 mm. film and, through the medium of the Army Motion Picture Service was shown in every War Department theater. Additional prints were made available for rebookings to any of these theaters upon request.

Orientation pictures were made available for distribution in both 35 and 16 mm. size film through the Central Film Libraries and sub-libraries in the various service commands, and were distributed overseas through the same channels used for training films. Orientation pictures, unlike entertainment pictures or G. I. movies, were shown to military personnel during training hours and attendance was compulsory.

Prints of training pictures are made available to the Central Film Library in all the service commands in the zone of the interior and to theater commanders overseas upon request. Efforts were made during the period under review to provide an adequate, but not an excessive, number of prints of any particular type of picture with a view to conserving the critically scarce film raw stock.

V-mail

By 30 June 1944, 4 V-mail stations in the United States and 22 stations overseas were handling over 63½ million letters per month. The Army Pictorial Service handled the mechanical process of transferring letters from the paper on which they are originally written to film and the reverse process at receiving stations. Over 90 percent of all letters received were handled in less than 24 hours. Ninety-nine percent of the volume comprising the sending operations was handled within 24 hours.

Chapter 13. PERSONNEL SERVICES

The rate of growth of the Army of the United States declined considerably in the fiscal year 1944. Whereas in 1943 total Army strength, including officers and enlisted men, increased by 3,900,000, in 1944 total strength increased by only 1 million persons. There was, accordingly, a decline in the burden of induction activity performed by the Army Service Forces.

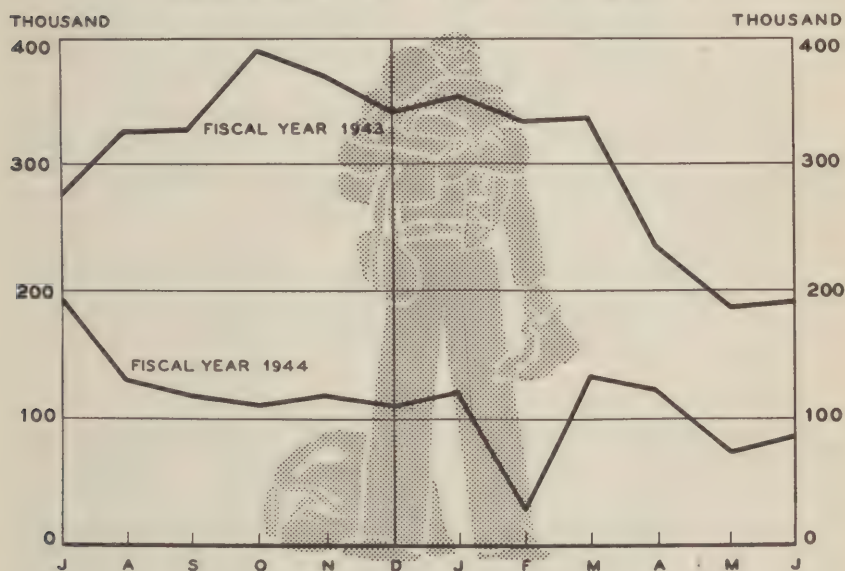
CHART 40
TOTAL ARMY STRENGTH



The month-by-month inductions into the Army are shown in Chart 43. Total authorized strength of the Army was originally expected to be realized by December 1943. Actual referrals from the Selective Service System in the last 3 months of the calendar year 1943 were below quotas. Increased referrals in March and April brought the Army to its total planned strength in the second month, whereupon inductions were reduced in May and June. By the end of the fiscal year total Army strength exceeded the planned maximum size. The overstrength was continued in anticipation of large-scale replacement requirements upon the commencement of active military operations in France.

The problem of age of inductees became pronounced during the fiscal year. For some time the average age had been steadily increasing from 22 years in 1940 to 26 by February 1944. In some infantry divisions the average age of all enlisted men was 28. At the same time the number of deferments for men under 26 years of age had increased from 8 percent to 11 percent. Consequently the War Department requested the Selective Service System to review deferments of men under 26 years of age. After April the military need was almost exclusively for replacements. With a change in induction policy by the Selective Service System in April 1944, the age distribution of selectees inducted into the Army greatly changed. For May, 74.1 percent of all inductees were in the age group 18 to 25, compared with 44 percent in March. In June men under 26 comprised 85 percent of all inductees.

CHART 41
INDUCTIONS INTO THE ARMY



Assignments of men at reception centers were made in accordance with instructions received from the General Staff. Priority was generally given to the requirements of the Army Air Forces and the Army Ground Forces. During most of the year the numbers available to the Army Service Forces were less than requirements to meet the ASF training program.

In addition to age, physical condition was a major factor in the assignment of men during the fiscal year. The general War Department policy enunciated in November 1943 required that each enlisted man be assigned to the position in which he could render maximum service. The large numbers of men rejected for induction because of a failure to meet physical standards made it necessary to relate military duties to physical status. A committee was established by the

War Department General Staff to review this problem and devise a method for measuring physical qualifications.

The result was a "physical profile plan" announced by War Department memorandum on 18 May 1944. This plan provided that each new inductee in the Army should be rated on six physical characteristics, including physical stamina, hearing and eyes, the range of motion and general efficiency of upper and lower extremities, and neuropsychiatric condition. For each characteristic four grades were given, the first two representing standards for general service, the third those acceptable for limited service, and the fourth, those below the minimum for induction. This physical profile plan was applied only to new inductees and to others placed through reassignment centers and reception stations. The administration of the physical profile plan thus fell almost entirely upon the Army Service Forces.

Initially the physical profile plan was used only for the purpose of dividing inductees at reception centers into three acceptable groups from which assignments were made to the Army Air Forces, the Army Ground Forces, and the Army Service Forces on a percentage-quota basis. These percentages changed from time to time, but a general preference was given to the Army Ground Forces. Otherwise the profile plan did not apply to job assignments at the reception center. Early in June 1944 reception centers reported men by physical profile and received assignment instructions on this basis. Thus, major emphasis was placed upon physical capacity rather than upon occupational background in assigning men to the three major commands. As before, critically needed specialists in certain categories were classified and assigned separately.

Because of the reduced induction load, the number of induction stations operated by the service commands of the Army Service Forces was reduced from 90 on 1 July 1943 to 79 on 30 June 1944; the number of reception centers declined from 38 to 26.

Personnel Reassignment Centers

The problem of reassignment of men between the three major commands became a major concern during the fiscal year. Not only was it essential to retain men within the armed forces who could perform satisfactory service regardless of their physical capacity, but also it was important to utilize occupational specialists to the fullest possible extent. Each of the three major commands of the Army found in 1944 that it had sizable problems of misassignment of enlisted men. For this reason a War Department memorandum on 26 January 1944, directed the Army Service Forces to establish personnel reassignment centers. Three of these were opened on 15 February at Camp Butner, N. C., Fort Sam Houston, Tex., and Camp White, Oreg. Operated by the appropriate service commands, these War Department personnel reassignment centers served all three major commands as well as the defense commands in the United States. These commands reported surplus personnel for whom no suitable assignment was available within their jurisdiction to The Adjutant General. When there was no immediate demand for such men reported to The Adjutant General's Office, the appropriate command was directed to send surplus personnel to one of these reassignment centers. A large proportion of the personnel sent to these centers consisted of men

released in a reduction of overhead or by inactivation of units. Recovered battle casualties, men returned from overseas, men rejected for overseas service at staging areas, and others were also sent to these assignment centers. A command was not supposed to report men when no useful reassignment could be made; these included men subject to discharge for physical disability, disciplinary cases, officers eligible for relief from active duty, and officers not qualified to perform duties within their present service.

The reassignment centers were not intended to become pools or training centers. Normally 10 days was the longest period in which an individual was expected to remain at such a center. Particular attention was paid at the reassignment center to physical qualifications and to training status. In many cases it was possible to find a new assignment only after additional training by one of the commands. Every effort was made by the Army Service Forces to provide the highest type of classification personnel at reassignment centers and to conduct special morale programs.

Between February and June 1944, some 23,000 men were processed through personnel reassignment centers; only 24 of these were officers. The average time spent in the center was 17.6 days. At the end of May there were 678 enlisted men and 8 officers awaiting reassignment in the centers. At that time the function of the personnel reassignment centers was limited to processing men returned from overseas. Each of the major commands was henceforth expected to find suitable assignments for men under their jurisdiction or to report them for discharge from active duty because of physical disability. Plans were under way on 30 June 1944, to close the reassignment centers and to replace them by redistribution centers which would provide more satisfactory facilities for the handling of men returned from overseas.

Another reassignment facility operated for the War Department by the Army Service Forces was the port of embarkation replacement pool. These pools contained personnel of all arms and services in the more common specialist groups completely prepared and available to fill vacancies in units awaiting embarkation at the port. The most important source from which port pools were filled was transfers from units and detachments passing through the port; however, port commanders could also requisition replacements from the three major commands. The size of these pools was rigidly limited to estimated requirements for 30 days, and personnel in excess of these requirements were reported for reassignment by the major command concerned. Port commanders had wide jurisdiction over unassigned replacements in the pool, including authority to transfer enlisted men (but not officers) from one branch of service to another. At the end of the fiscal year, port of embarkation pools were redesignated "port casual detachments," and restricted to personnel dropped from units and detachments passing through the port and qualified for service overseas. The time limit on estimated requirements governing the size of port detachments was reduced to 15 days.

To assist the Army Ground Forces and the Army Air Forces as well as the technical services and service commands of the ASF in reviewing assignments of men in relation to classification, the War Department in November 1943, directed The Adjutant General to establish personnel audit teams. Four such teams were set up con-

sisting of four officers each. The entire United States was divided into four areas and one team assigned to each area. These personnel audit teams made visits to all stations in the continental United States to determine the effectiveness of the classification and assignment system. These teams reported to the commanding general of the command concerned and to the Assistant Chief of Staff, G-1, recommending further studies and citing examples of malassignment. Findings were discussed informally with commanding officers and assistance was given to all field units in improving their own assignment procedures in accordance with personnel classifications.

Personnel Returned from Overseas

During the first year and a half of the war the return of individuals from overseas theaters presented no particular problem. By August 1943, however, the volume of returning individuals began to increase and it became necessary to work out uniform procedures designed to handle large numbers of men. On 28 June 1943, the War Department issued a circular providing for the rotation and return of military personnel on duty outside the United States. In addition, individuals might be returned from overseas as military operations in an area declined, such as in Canada for the building of the Alaska Highway, or in Alaska; others might return for furlough and others for temporary duty incidental to recuperation and recovery. The total number returned under these procedures by 30 June 1944 was over 74,000.

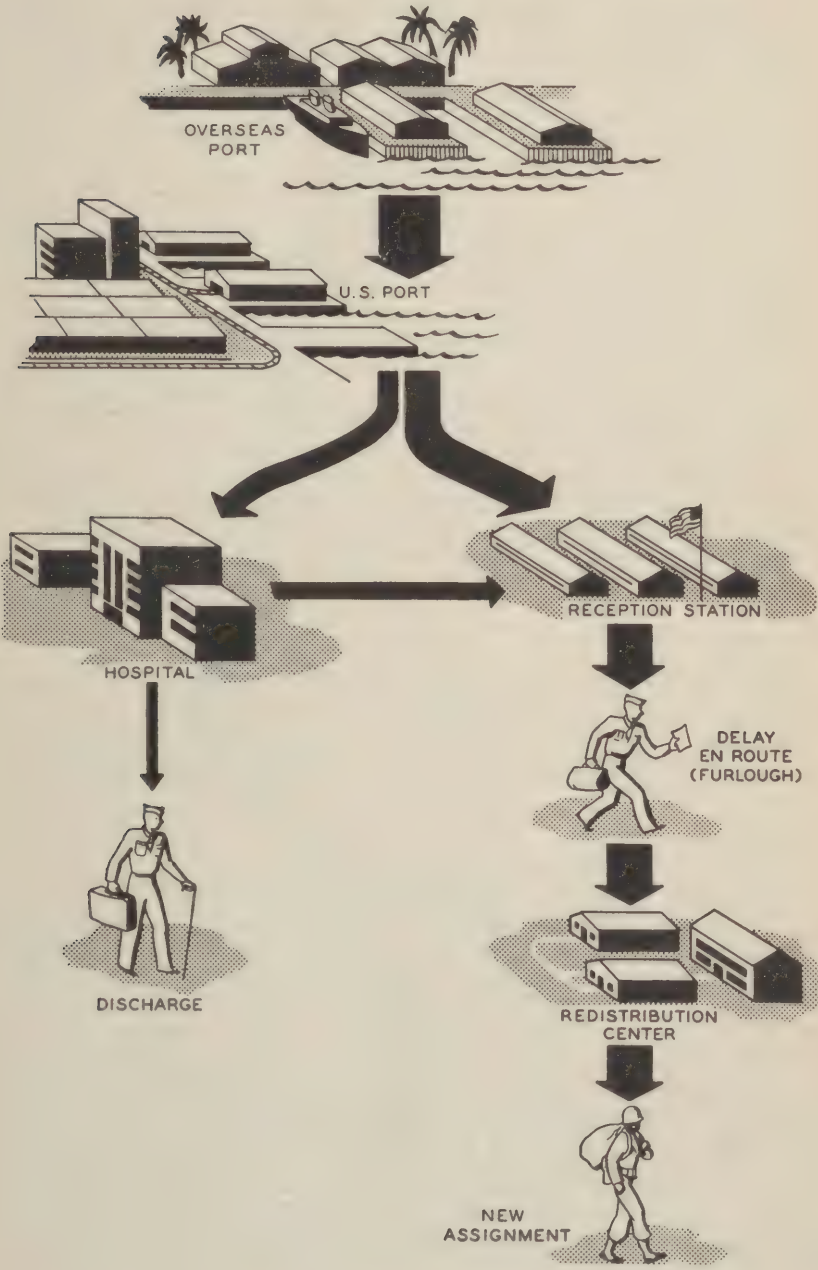
When men under these categories were returned to the United States as individuals, some machinery had to be created for handling their reception in the United States and their further assignment. The Army Service Forces accordingly set up reception stations in September 1943 at 14 posts throughout the United States. These reception stations were administered as a function of an existing reception center. They differed from reception centers in that their job was to process enlisted personnel returned from overseas, while the reception center processed inductees just entering the Army. The reception station received personnel from ports of embarkation. Personnel returned from overseas were ordinarily dispatched to the reception station closest their home. Normally a man did not spend more than 3 days at a reception station. If possible, the reception station commander assigned returned individuals to one of the three commands according to requisitions on hand. If such assignment could not be made within 3 days, the individual was given a furlough of 3 weeks and then required to return to the reception station for permanent assignment within the United States. In some instances an individual was directed after his furlough to report to a reassignment center or to some post for reassignment by one of the three major commands. Reception stations were located at Fort Devens, Camp Upton, Fort Meade, Fort Bragg, Camp Shelby, Fort Benjamin Harrison, Fort Sheridan, Fort Logan, Jefferson Barracks, Camp Beauregard, Fort Bliss, Fort Douglas, Fort Lewis, and the Presidio of Monterey. Ground Forces and Air Forces liaison officers assisted in recommending assignments for personnel coming through reception stations.

During the fiscal year 1944, a total of 796 units were returned from overseas. In these instances embarkation procedure was followed in

CHART 42

RETURN OF PERSONNEL FROM OVERSEAS

30 JUNE 1944



reverse. Movement orders directed a unit to enter by a particular port of embarkation. From the port the unit was transported immediately by the Transportation Corps to a permanent station within the United States. In some instances a post near a port of embarkation was used as a temporary concentration point until all the men of a unit with their equipment could be assembled as a group. They were then moved to their station. Usually, however, personnel moved directly from a port to a post with their equipment following them.

Processing Centers

Two processing centers were established during the year to receive absentees returning to duty when their units had left the United States, when their units had left their home station and immediate location not known, or when the absentee had been a member of a casual detachment going overseas. Individuals at processing centers completed their final preparations for overseas, and were sent to an overseas replacement depot or to a port of embarkation if their sentence were suspended, or as soon as they completed their term of confinement or had a part of the sentence remitted. The processing centers were located at Camp Edwards, Mass., which had 2,800 men on hand on 30 June 1940, and Camp McQuaide, Calif., which had 800 men.

The processing centers were intended to maintain disciplinary standards and physical conditions, provide refresher instruction in basic military and technical subjects, and remove training deficiencies. Training was carried on concurrently with the execution of any punishment.

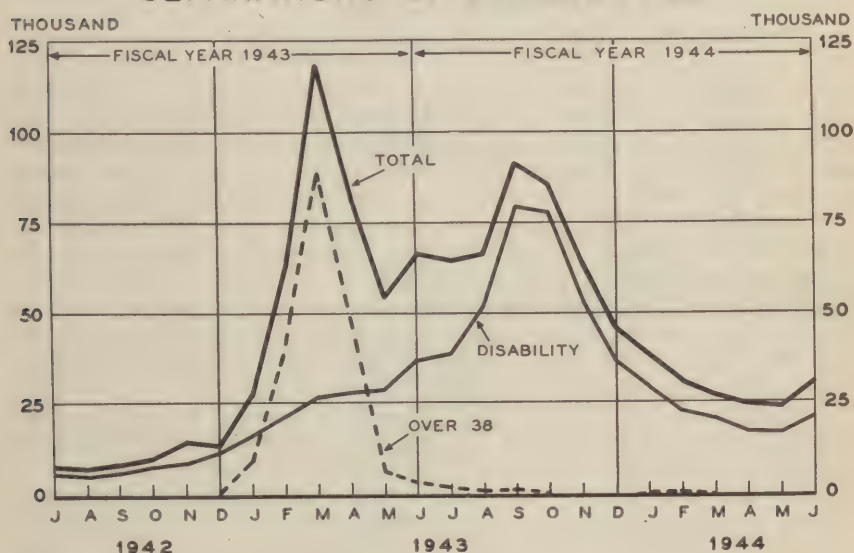
Separation Procedure

At the beginning of the fiscal year 1944 the Army had already passed one major peak in the discharge of enlisted men from service. In March 1943, some 90,000 individuals were released from active service because they were over 38 years of age. By the end of the fiscal year 1943 discharge of men as over age had virtually ended. At the same time early in the fiscal year 1944 discharge for physical disability expanded considerably. In the last 6 months of the fiscal year 1943 disability discharges averaged about 25,000 a month.

On 14 July 1943, War Department Circular 161 directed that the category "limited service" be abolished, and that all men so classified whose record indicated that they could not meet current physical standards for induction were to receive medical examinations. If this examination indicated that they still failed to meet minimum induction standards, they were to be discharged from the Army. In July 1943, disability discharges numbered nearly 39,000; in September this number had grown to 79,000. Early in November, War Department Circular 293 declared that it was "imperative that each enlisted man be assigned to the position in which he can render the maximum service." The discharge of enlisted men for physical reasons was discontinued if other suitable employment were available having less exacting physical standards than those required for the work he had previously performed. Thereafter, disability discharges began to drop, as is shown in the accompanying chart.

The large bulk of discharges for medical reasons focused attention on the complicated procedures involved. At the same time it became evident that adequate preparations should be made for handling large-scale separations from the service when victory was won. For this reason the Army Service Forces developed separation procedures for speeding up the process. The accomplishments are described in the chapter on administrative developments during the fiscal year. As a part of the new procedures a pilot separation center was activated at Fort Dix on 30 March 1944. To this separation center were sent enlisted personnel eligible for discharge or release from active duty under army regulations. Disability discharges continued to be handled at station and general hospitals. Separation procedures in-

CHART 43
SEPARATIONS OF ENLISTED MEN



volved the administration of final physical examinations, the closing of personnel records, clearing responsibility and accountability to the Government on all fiscal matters, final payment, and return of the soldier to a designated locality. It was also important to provide capable and considerate counselling to discharged personnel in assisting them to return to civilian status. Recreation facilities also were provided. Under the procedures followed at Fort Dix only 48 hours were required from the time a man arrived at the separation center until he boarded a train for home. Under former methods as much as 3 weeks in time were consumed. When the discharged soldier left the center he took with him his uniform, a discharge certificate, and a statement of his military service listing his qualifications and experience.

The increasing emphasis on physical standards in classification had their effect on discharge policies. Since physically qualified men were being sent overseas rapidly, it was necessary to replace them

from categories not qualified for overseas service. One result was that a greater effort was made to retain in the service men who were eligible for discharge, but who might still perform useful service. Early in March 1944, the War Department established the policy that men permanently disabled in combat might be discharged if they wished, even though they were qualified for limited duty.

The following month the ASF put into operation a procedure designed to induce these men to remain in uniform by impressing upon them the importance of their services. Those who elected to be discharged were encouraged to accept civilian employment in the War Department. In each case, a thorough study was made of the man's qualifications and the types of useful employment open to him. In no sense, however, was pressure applied. Each individual was made to understand that discharge would not jeopardize his Army record. A decision to remain made while the man was in the hospital could be freely withdrawn at a later time.

OFFICER PROCUREMENT SERVICE

The Officer Procurement Service continued throughout the fiscal year 1944 to be the central War Department service operated by the ASF for the recruitment of civilians for commissions in the Army of the United States. Certain officer needs of the Army, such as doctors, dentists, veterinarians, chaplains, and a few other professional specialists could be obtained only from civilian sources. With these exceptions, recruitment of officers from civilian life declined in the calendar year 1944.

On 13 July 1943, the Acting Secretary of War issued instructions that, with certain exceptions, action was to be taken to discontinue the appointment of officers from civilian life. Each major command in turn reduced its demands for officer personnel directly commissioned.

During the fiscal year 1944 the Officer Procurement Service received some 41,000 requests for appointment. A total of 14,243 cases was submitted to the Secretary of War's personnel board for approval. Of this number, 13,747 were approved for appointment. Approximately 58 percent of all appointments were made for the Medical Department. Another 13 percent were appointed in the Corps of Chaplains. Thus, 70 percent of all persons commissioned from civilian life in the fiscal year 1944 were in the medical and chaplain branches of service. The other two sizable groups of appointments were for the Army Air Forces and for the Transportation Corps.

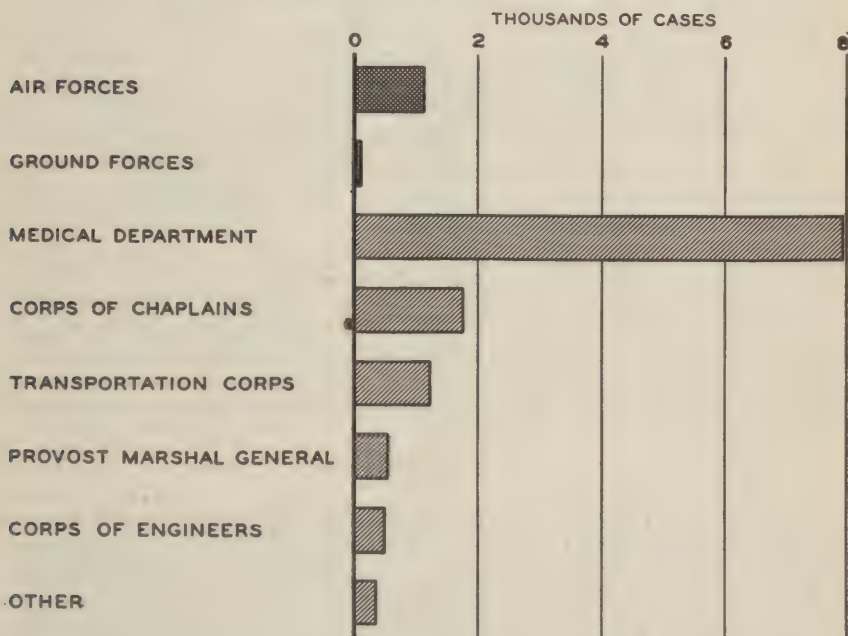
The quota of medical officers desired during the fiscal year 1944 was not realized. All applications for commission from doctors and dentists were cleared with the Procurement and Assignment Service of the War Manpower Commission. Doctors were not taken from areas where the available civilian medical service was already at minimum desirable levels. The Army reduced its requirement for medical officers during the year from 8.5 medical officers per thousand soldiers in theaters of operation to 6.5; within the United States requirements were reduced from 6.5 per thousand to 4.6. The deficiency was met in part by the use of medical administrative corps officers as assistant battalion surgeons and in nonmedical positions.

There was likewise a failure to meet the requirements for trained nurses. The American Red Cross continued to function as the official

recruiting agency and cleared all application papers with the War Manpower Commission before they were turned over to the Officer Procurement Service. The proportion of nurses to hospital beds was reduced from 1 nurse—10 beds, to 1 nurse—12 beds.

The Surgeon General requested the Officer Procurement Service to obtain dieticians and physical therapy aids during the year for appointment as second lieutenants in the Medical Department. Fully qualified personnel in both fields proved very limited and desired quotas could not be obtained. During the year direct appointments were made of 450 dieticians and 147 physical therapy aids. In addition, a substantial number of apprentice and student dieticians were

CHART 44
OFFICER PROCUREMENT
CASES APPROVED
BY THE SECRETARY OF WAR'S PERSONNEL BOARD



obtained who would be appointed upon completion of additional training at Army and civilian hospitals. At the end of the year it was estimated that 120 graduates would be available for appointment each 3 months beginning in July 1944.

Because of its experience in the procurement of technical personnel for the Medical Department, the Officer Procurement Service was directed toward the end of the year to cooperate and assist in the recruitment of female technicians for service with medical installations as enlisted personnel in the Women's Army Corps. This required the recruitment of approximately 8,000 women for direct assignment to

training in 22 different positions in Army hospitals. This recruitment program was gaining momentum at the close of the year.

On 12 December 1943, the Secretary of War authorized the ASF to give commissions in the Army of the United States or to call to active duty civilian medical and dental employees of the Veterans' Administration for appointment to work with that agency. This authority was subsequently extended in April 1944, to permit the commissioning of physicians and dentists not employed by the Veterans' Administration made available by the War Manpower Commission to serve with that organization. By 30 June 1944, 999 medical officers and 99 dental officers had been appointed or called to active duty for service with the Veterans' Administration.

As a result of its activities the Officer Procurement Service had accumulated by the end of the fiscal year more than 268,000 applications of persons who had not been commissioned as officers. This file proved invaluable in finding persons qualified for additional requests for officer personnel and also assisted the War Department and other Government agencies in locating qualified personnel for civilian employment. During the year the Officer Procurement Service received and evaluated qualifications of 8,292 warrant officers and enlisted men in the Army who possessed professional, technical, or special skills. Of the total number, 2,640 were found to possess special skills in scarce categories and 120 were commissioned as officers. This procedure was primarily effective in locating enlisted personnel qualified for appointment in the Sanitary Corps of the Medical Department. The records of some 2,520 other enlisted men and warrant officers were being held for future consideration.

In March 1944, the Officer Procurement Service was directed to obtain 940 accountants and auditors for employment as civilians in the renegotiation and termination activities of ASF technical services. A total of 11,597 applications were obtained by the Service and submitted for consideration to technical services. The original requests of this type were subsequently expanded to include others besides accountants and auditors.

WAC RECRUITING

Although the Office of the Director of the Women's Army Corps was transferred to the General Staff during the fiscal year 1944, the Army Service Forces continued to be responsible for the recruitment of WAC personnel. This recruitment program was operated by the service commands under the direction of ASF headquarters. The growth of the corps during the fiscal year 1944 is shown in the accompanying chart.

The Women's Army Corps was officially formed on 1 September 1943 as provided in the act of Congress approved 1 July 1943. In the conversion from the Women's Army Auxiliary Corps to the Women's Army Corps all enlisted personnel and officers were required to re-apply for service. A net loss of some 14,000 personnel occurred as a result of this conversion.

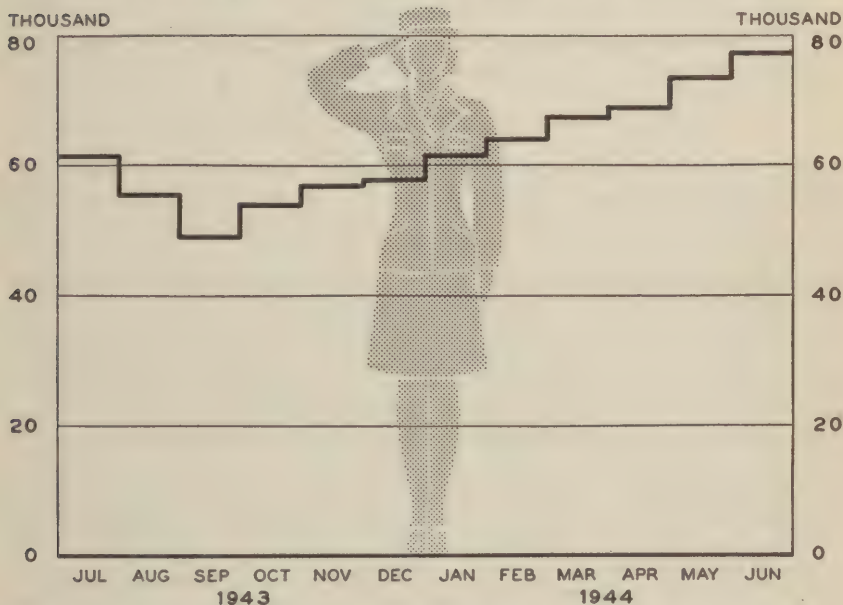
In January 1944 a planning branch for WAC recruiting was established in the Office of The Adjutant General to stimulate recruiting through the use of accepted promotion methods. Policies to guide the recruiting program were determined by a "Planning Board for WAC

Recruiting" composed of The Adjutant General, the Assistant Chief of Staff, G-1, the Director of the Women's Army Corps, and the Directors of Personnel from Army Ground Forces, Army Air Forces, and Army Service Forces. The policies of this board were carried out in the service commands under the supervision of the Planning Branch for WAC Recruiting.

A program to obtain sponsored advertising on behalf of WAC recruiting was instituted with the cooperation of the Office of War Information and the War Advertising Council. By the end of the year free advertising through all available media including radio, magazines, newspapers, and billboards was being obtained amounting in value to over 5 million dollars. The War Activities Committee of

CHART 45

STRENGTH OF WOMEN'S ARMY CORPS



the Motion Picture Industry conducted "WAC Week" in May 1944 in 16,000 movie houses by exhibiting movie trailers on the work of the Women's Army Corps and by presenting exhibits in lobbies. The Post Office Department cooperated in the recruiting program by disseminating leaflets through the 43,000 post offices in the United States.

A continued flow of information about the Women's Army Corps was also channelled to all military units of the Army in order that the Army itself might cooperate in persuading women to join the Corps. Based on a plan developed in the Seventh Service Command, other commands instituted comprehensive programs designed to impress enlisted men with the effectiveness and importance of the Women's Army Corps and with the need for more enlistments. Upon the basis of competitive bids a national advertising contract for the corps was awarded to Young & Rubicam, Inc.

During the fiscal year a new summer worsted uniform for enlisted women in the Women's Army Corps was designed by the Quartermaster Corps. A new garrison cap was designed by a leading private hat manufacturer and an off-duty dress was authorized together with chamois-colored scarf and gloves. Enlisted women were also permitted to wear high-heeled shoes off duty. Sample uniforms were supplied to each recruiting station to permit prospective recruits to try on the uniform of the corps.

A new screening process to improve the quality of recruits was developed during the year and tried out at several recruiting stations. The new procedure was to be universally adopted early in the fiscal year 1945. All service commands were assisted during the year in finding qualified personnel for recruiting duty. A training program for WAC recruiters was established at the Adjutant General's School in Maryland and bulletins were distributed between service commands to inform recruiting personnel of developments in various recruiting programs. The success of these measures was attested by the high level of recruitments obtained from January to June 1944. In January total recruitments numbered 3,280, in March 4,213, and in June, 4,663.

THE OFFICERS RESERVE CORPS

The Office of the Executive for Reserve and ROTC Affairs continued during the fiscal year 1944 to be the central point of contact on questions affecting the interest of Reserve officers and of the ROTC program. Records were kept of the part played by Reserve officers in the Army of the United States during the present war. All Reserve officers were on active duty with few exceptions. By the end of the year 27 percent of all officers on active duty were Reserve officers. This was a considerable decline from the proportion of 73 percent which obtained 2 years before. The large number of appointments in the Army of the United States, particularly graduates of officer candidate schools, caused the proportion thus to decline.

During the fiscal year 1944 basic ROTC instruction was continued as in previous years. The one change was that all such instruction was continued on a common basis not intended to train for any particular branch of service. No advance course contracts were offered to ROTC students during the year because of the Selective Service Act. By the end of the year some 13,762 second-year advance-course students had entered officer candidate schools and of this number, 86.1 percent were appointed as commissioned officers in the Officers Reserve Corps. These students were enrolled and placed under contract prior to 1 August 1942. In addition, some 3,959 first-year advance-course students had completed officer candidate schools, of whom 73 percent received commissions. Undoubtedly others would receive commissions at a later date. Altogether there were about 9,000 first-year advance-course students under contract on 1 March 1943, when further contracting was discontinued.

The ROTC program of training in secondary schools was continued without particular change during the fiscal year. Representatives of the Executive for Reserve and ROTC Affairs attended meetings of many different universities, schools, and colleges during the year to obtain their point of view about participation in post-war ROTC programs.

CHAPLAINS

The Corps of Chaplains in 1944 extended its work all over the world as more troops went overseas and as more combat units were created. During the year the size of the corps increased from 6,030 to 7,582. The religious services for soldiers were carried on under every conceivable circumstance and every kind of weather and climate. The Secretary of the General Commission on Army and Navy Chaplains declared in a statement on 29 February 1944: "Our young men are better looked after morally and spiritually than any other Army and Navy in the history of the world."

The number of chaplains assigned to transports was increased during the year and understandings were reached on the use of chaplains on foreign vessels hauling American troops. Other chaplains were assigned to serve on hospital ships.

Arrangements were agreed upon during the year between the Chief of Chaplains and the Provost Marshal General on providing a spiritual ministry to the growing number of prisoners of war in the United States. Some difficulty was experienced in finding chaplains with a sufficient command of prisoners' languages. In certain instances qualified civilian clergymen assisted Army chaplains. A number of chapels were built from salvage material by the volunteer labor of prisoners. Education equipment and supplies were furnished chaplains through the International YMCA and religious materials were provided by the major religious groups in the United States.

In order to give officers and enlisted men throughout the Army a more adequate realization of how chaplains might assist them in their responsibilities, the Signal Corps produced a training film for the Chief of Chaplains "For God and Country." This was widely shown throughout the Army and was made available to civilian institutions.

The Chief of Chaplains during the year made further arrangements for prominent clergymen to inspect chaplain activities overseas. The General Commission of Army and Navy Chaplains continued to serve as the representative of about 30 protestant churches in dealing with questions affecting the religious welfare of soldiers. The Army and Navy Ordinariat of the Roman Catholic Church and the Jewish Welfare Board represented their respective faiths in matters affecting the Corps of Chaplains.

The problem of obtaining men qualified in every way to serve as chaplains did not diminish in 1944. A reduction in the educational requirements for Negro chaplains helped to meet this deficiency by enabling a larger number of Negro clergymen to qualify for appointment. Many complaints were received from small denominations because they were not represented in appointments to the Corps of Chaplains. An arrangement was made for several of these groups to endorse candidates for the chaplaincy through their own federation, the American Council of Churches. At the end of the year the same arrangement was under discussion for the newly formed National Association of Evangelicals. A small number of Russian Orthodox chaplains were on duty during the year, but it was impossible to obtain any Greek Orthodox chaplains. The problem of appointing Eastern Orthodox chaplains to the Chaplains Corps was still unsolved at the end of the year, however.

The school term in the Chaplains' School at Harvard University was extended from 4 to 5 weeks in the autumn of 1943. Some 2,962 persons were enrolled during the year, of whom 2,681 were graduated and commissioned in the Army. The Chaplain's Manual was rewritten during the year to include much of the material previously distributed in circular letters.

The problem of transportation for chaplains was in large measure relieved by War Department Circular 81, 22 February 1944, which authorized a quarter-ton truck and a quarter-ton trailer for each chaplain assigned to units operating under tables of organization and equipment. Production of the folding organ was retarded for some time because of difficulties in obtaining critical materials. By the end of the year the schedule of deliveries was being maintained. Band arrangements of Army chapel hymns were prepared and distributed during the year. An 8-page folder called "Hymns from Home" was designed for use where larger hymn books could not be obtained. Five million copies of these were distributed. Additional printings of 1,258,000 Army testaments in Protestant, Catholic, and Jewish versions provided copies to all military personnel desiring them.

The Chaplains' Activities Fund provided additional equipment and supplies for religious activities. During the year \$59,000 was allotted for purchases requested by individual chaplains, \$160,000 was allotted to the Quartermaster Corps for chaplain equipment, and \$60,000 was made available to ports of embarkation to meet the needs of chaplains overseas.

The Office of the Chief of Chaplains endeavored in many ways to promote an intelligent understanding of religious work throughout the Army. A narrative account of chaplain activities was distributed to all public libraries and arrangements were made for numerous radio and other public features describing the work of the corps. More than 11,000 certificates were issued during the year to churches and other institutions which had supplied clergymen for the chaplaincy.

In April 1944 the Commanding General of the Army Ground Forces requested the appointment of a liaison chaplain in his headquarters to assist in providing adequate personnel to combat units. In September 1943, a War Department circular authorized advancement from the grade of first lieutenant to that of captain on the same basis as medical and dental officers. An act of Congress approved 28 June 1944 authorized the appointment of the Chief of Chaplains to the temporary rank of major general and the appointment of other chaplains to the rank of general officer as the Secretary of War might recommend.

Information provided the Office of the Chief of Chaplains indicated that during the fiscal year 1944 attendance at church services conducted by chaplains amounted to over 60 million, while another 17 million attended week-day services. The number of persons visited by clergymen was nearly 10 million. In order to exchange information about the work of chaplains, a conference of senior chaplains of service commands, of ports of embarkation, of armies and corps, and of comparable Air Forces headquarters was held in June 1944. An inspection system of all chaplain activities was established at the end of the year.

PERSONAL AFFAIRS

The Army Service Forces created a personal affairs organization in February 1944, in order to provide all Army personnel and their dependents with adequate information about personal matters. At each post, camp, and station in the United States personal affairs officers were appointed. A Personal Affairs Division in Headquarters, ASF, served as the center of information for the direction of the whole program.

The types of problems coming to personal affairs officers, fell into three general classes: Problems concerning benefits administered by the War Department, such as family allowances, allotments of pay, death benefits, and burial rights; problems concerning benefits administered by other Federal agencies, such as veterans' pensions, veterans' hospitalization, social-security rights, and employment of veterans; and problems concerning benefits administered by the Red Cross, the Army Emergency Relief, and by State or privately organized agencies such as maternity care for wives of enlisted personnel, hospitalization of dependents, and other assistance. The number of agencies providing assistance to military personnel and their families made the position of personal affairs officer an important one in directing soldiers to the appropriate agency. In a number of cases the personal affairs officer served as the official representative of some agencies, such as the Army Emergency Relief, and maintained close liaison with all other agencies inside and outside the War Department.

The major problem of the program in its early stage was to develop adequate instruction for all personal affairs officers about the scope of their duties, the distinction between furnishing information and giving technical advice, and services available to military personnel and their dependents. A conference was held in Washington in March at which the plans and purposes of the new service were fully discussed. At the end of the fiscal year arrangements had been made to train personal affairs officers in a special course at the School for Special and Morale Services beginning 1 August 1944.

From available information it appeared that 45 percent of all inquiries made to personal affairs officers concerned family allowances and allotments. Another 10 percent concerned possibilities of financial aid. Other questions covered the wide range of bonds and insurance, death benefits, employment, housing, maternity cases, and medical care.

A liaison office was established at the Office of Dependency Benefits which assisted in meeting inquiries about family allowances and allotments. The majority of these inquiries resulted from an amendment to the Dependency Act which reduced the amount payable to class B dependents. The liaison officer set up uniform procedural methods to be followed by all personal affairs officers in dealing with the Office of Dependency Benefits.

A National Women's Volunteer Committee was established in March 1944 to direct the activities of women's volunteer committees assisting personal affairs officers. The National Committee cooperated in maintaining relations with the American Red Cross and encouraged Army women to volunteer services for Army welfare activities. Women vol-

unteers visited the homes of next of kin in cases of battle casualties to make sure that necessary arrangements for care were made. These visits were received with expressions of gratitude and appreciation.

SPECIAL SERVICES

Army Exchange Service

During the fiscal year 1944 the attention of the Army Exchange Service shifted increasingly to overseas activities. The number of post exchanges overseas increased from 109 to 288, while those in the United States fell from 743 to 636. Overseas outlets or branches operated by exchanges at the close of the year amounted to 5,000, compared with 5,920 outlets in the United States. Gross domestic sales in the month of June 1944 amounted to some 65 million dollars, while overseas sales amounted to 21 million dollars.

The headquarters office of the Army Exchange Service in New York City received orders from overseas to purchase commodities for sale by post exchanges. Procurement offices were located in New York City and San Francisco. During the fiscal year 1944 these procurement offices placed orders amounting to \$112,500,000. Of this total, more than 89 million dollars in orders were placed for post exchanges located overseas. The remainder was about equally divided between orders placed for domestic exchanges and orders placed for the India Supply Mission on behalf of canteens operated by the British in India.

Arrangements were made in October 1943 whereby exchanges within the United States and exchanges overseas might obtain items of military clothing from quartermaster depots. These items included neckties, shirts, socks, sweaters, trousers, belts, undershirts, shorts, and insignia.

In 1942 a gift service was established by the Army Exchange Service to enable soldiers overseas to order gifts for persons in the United States through mail-order catalogs. In the 12 months ending 30 June 1944 the gift service filled more than 1 million orders, an increase of more than 900,000 over the preceding 12 months. Preparations were made to handle an expected 2 million orders for Christmas 1944. The Christmas catalog sent out to theaters before the end of the fiscal year contained more than 200 gift suggestions ranging from toys to War bonds. A survey was made during the year to determine whether the gift service was functioning properly. Responses to inquiries from recipients indicated that gifts had been delivered promptly and the quality was satisfactory.

At the end of the year 904 price agreements were in effect enabling domestic exchanges to purchase goods at stated prices. Of these agreements, 32 covered scarce items requiring priorities which were obtained through other Government agencies.

The number of civilian employees working for post exchanges increased from 50,000 to 65,000 during the year. A volunteer group insurance plan was developed for these employees and by the end of the year was in effect at about 75 percent of post exchanges. This insurance plan included hospitalization, accident indemnity, and life insurance. Each exchange paid 59.6 percent of the premium for its employees. The Army Exchange Service also sponsored a civilian

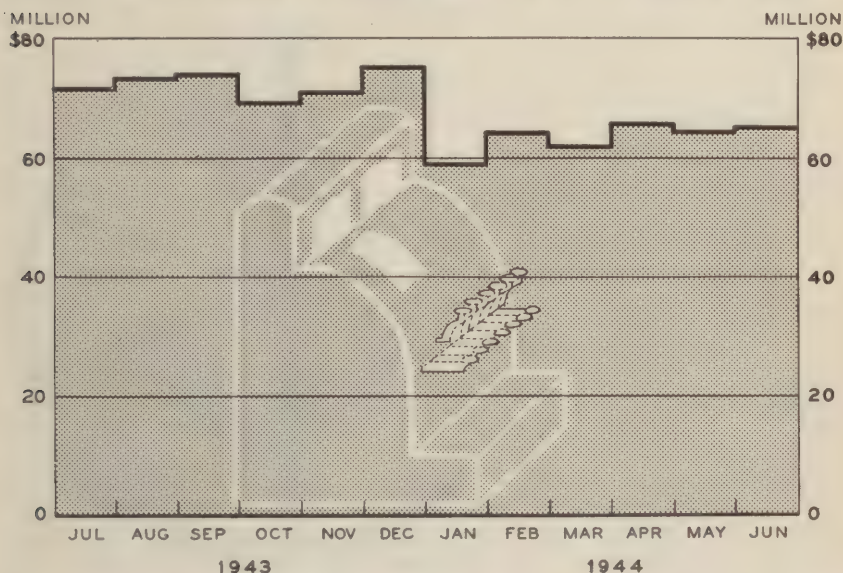
training course at New York University for civilian employees. Between October 1943 and May 1944, 4 courses were given and 109 employees completed training.

Officer training for exchange activities continued during the year, a total of 1,032 officers receiving instructions from the Army Exchange School which was moved from Princeton, N. J., to the School for Special and Morale Services at Lexington, Va.

Transportation insurance rates were generally reduced during the year. Insurance premiums for merchandise and equipment located overseas and in transit overseas were reduced 40 percent, while war risk insurance rates on water shipments were reduced from 80 to 89 percent. Domestic intransit rates were also reduced from 3 to 2 cents on the dollar.

CHART 46

POST EXCHANGE SALES IN THE UNITED STATES



Authorized dealers who purchased Army uniforms under license from the Army Exchange Service were permitted during the year to return for full credit any merchandise obtained for sale at low mark-up prices. These returns had to be made before 20 March 1944. About \$600,000 worth of uniform items were returned to the Army Exchange Service and used to replenish stocks at overseas exchanges or at officer candidate schools.

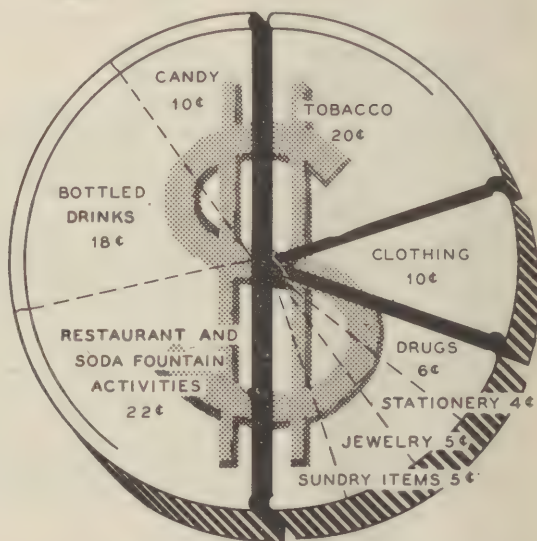
The contraction of domestic activities raised the problem during the year of liquidating army exchanges. This question was discussed at a conference of service command and exchange officers in Chicago in January 1944, and also with various retail trade associations. In the autumn of 1943 a committee of three, consisting of a civilian manufacturer and two officers with business background, was assigned the task of preparing a detailed plan for the liquidation of

domestic exchanges. The result was War Department Circular 55 published on 8 February 1944 which set forth procedures for operating and liquidating army exchanges in the continental United States. Three central distribution liquidation centers were established before 30 June for disposal of surplus merchandise.

Under War Department policy of paying claims resulting from losses through enemy action, the Army Exchange Service made payments totaling \$18,000 to 45 creditors of Philippine exchanges. The value of loans from the Defense Supplies Corporation outstanding against the Army Exchange Service was reduced from 24 million dollars, the peak, to \$12,800,000 by 30 June 1944. At the end of the year 97 percent of the loans payable to the Defense Supplies Corporation were owed the Army Exchange Fund by oversea exchanges. These funds were lent to exchanges as operating capital with which to purchase supplies for sale to troops.

CHART 47

HOW
THE DOLLAR
IS SPENT
IN THE
POST
EXCHANGE

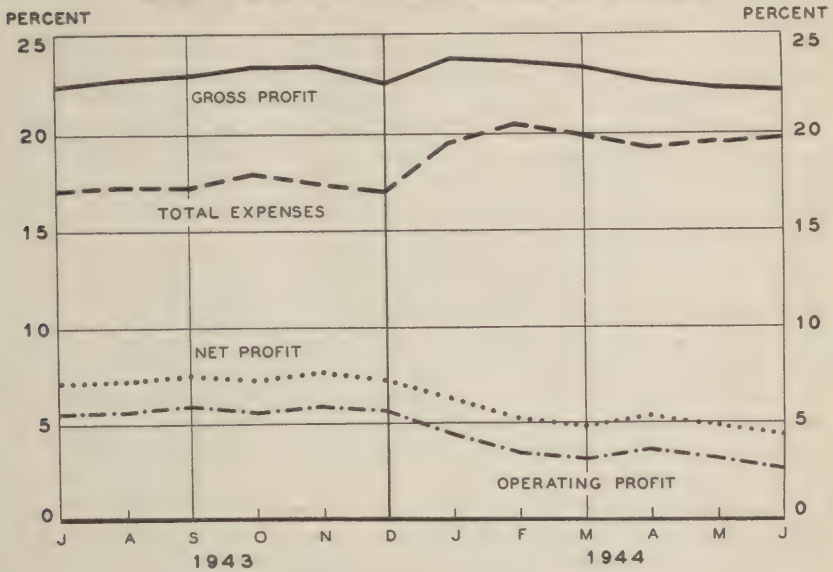


Of all money spent in post exchanges about 22 cents out of every dollar went for food and soda fountain items; 20 cents went for tobacco; and 18 cents for bottled drinks. The remainder was divided among candy, drugs, jewelry, clothing, and other items.

The trend during 1944 in gross, operating, and net profit and total expenses in relation to direct sales is shown in the accompanying chart. In February 1944, a War Department circular limited maximum net profits allowable from post exchange operations to from $3\frac{1}{2}$ to 6 percent. In only one service command in May 1944 did exchange profits exceed 6 percent and then only by 0.15 of 1 percent. In four service commands exchange profits ranged between 4 and 5 percent and in five service commands between 5 and 6 percent. There were many individual exchanges in each service command which made more than the allowable profit and others which made considerably less.

CHART 48

POST EXCHANGE PROFITS AND EXPENSES AS PERCENT OF DIRECT SALES



Athletics and Recreation

The athletic and recreation program of the Army centered around sports and games, arts and crafts, music, library facilities, entertainment, and general welfare work. Approximately \$9,000,000 worth of equipment was distributed in continental United States and overseas during the fiscal year 1944. Sports and games were organized by post special service officers, under the guidance of service commands and ASF headquarters. Athletic programs were compiled, edited, and distributed to posts. A clearing house on programs was set up for the exchange of ideas both within the United States and overseas. Periodic visits from headquarters officers, and service command athletic conferences stimulated interest and effort. A substantial increase in athletic activities in all service commands was reported during the year.

After a tour of United States camps, the boxing troupe featuring Joe Louis was sent overseas as part of a program of special projects. A fund donated by the Bowlers Victory Legion was used to purchase \$50,000 worth of fishing kits for overseas distribution. The Bat and Ball Fund made available approximately \$150,000 worth of baseball equipment for overseas shipment. Athletic equipment was not packed in kits for units to take with them overseas during the year, but was shipped in bulk for distribution by the overseas command.

The Army's 2,000 libraries—stocked with 15,000,000 books—at camps, posts, and stations throughout the United States were maintained and supplied with additional reading materials. With the rapidly increasing movement of troops from the zone of the interior to overseas theaters, there was a parallel increase in the shipment of

reading materials overseas. Council books and unit magazine sets had the widest general appeal to soldiers. Council books, or armed services editions, were paper bound, pocket-size books, published by Editions for the Armed Service, Inc., a subsidiary of the Council on Books in Wartime. They were sold at cost to the Special Services Division for distribution overseas. Thirty-two titles were selected each month from lists of current best sellers, popular classics, and other books popular with service personnel, and shipped to all company size units in overseas departments and theaters. The number of books shipped each month increased from 1,200,000 in October 1943, to 2,130,000 in June 1944. The total quantity shipped during the fiscal year was more than 14 million volumes, including 400,000 volumes for American prisoners of war.

Magazines for overseas distribution were shipped in monthly unit sets. The selection of magazines was based upon studies made to determine both the types of magazines popular with military personnel and the most popular magazines of each type. The unit sets were sent out by mail in weekly packages addressed to individual units to facilitate prompt delivery. Additional bulk shipments of unit sets were made to headquarters of theaters to fill special requisitions. The first unit sets of magazines, issued in January 1943, consisted of 17 different magazines. Including extra copies of the most popular publications, the monthly weight limit of 17 pounds was reached with a total of 35 individual magazines.

Early in 1943 magazine publishers and the Special Services Division cooperated in the designing of light-weight editions intended to conserve weight and cubage. The special overseas editions printed in light-weight paper, contained no advertising and in some cases were printed in smaller type and on smaller formats. By 30 June 1944, it was possible to include 28 different magazines, with a total of 100 individual copies, within the 17-pound weight limit. The quantity of individual copies shipped overseas per month increased during the fiscal year from approximately 1 million in July 1943, to 5 million in June 1944. The total quantity shipped during the fiscal year was 31 million.

Other standardized sets of reading materials which were developed for overseas shipment were RB libraries (500 clothbound books, containing fiction and nonfiction of general interest), RB kits (100 clothbound reference books), PB kits (500 miscellaneous paper-bound books), and C kits (100 clothbound and 1,900 paper-bound books). The RB and PB sets were designed principally for static units; the C kits for mobile special service company libraries. In addition to the standardized sets, many requisitions for books were filled by the Special Services Division. These requisitions varied in size from a request for two copies of *Who's Who in America* to one for seventy 2,000-volume libraries. More than 3 million volumes of paper-bound and 500,000 clothbound books were purchased to fill these overseas requisitions.

A booklet entitled "Interior Design and Soldier Art" was printed and distributed during the year to show how arts and crafts might be used to promote soldier morale. This booklet outlined the planning and execution of interior decorating, mural painting, and related art activities in Army installations. By 30 June some 11,000 copies had

been distributed in this country and overseas. Difficulty in purchasing arts and crafts supplies in overseas theaters necessitated the distribution of these supplies in kit form. In July 1943, the first specifications for "handicraft kits" were drawn up. These kits combined six different activities—sketching, knotting and braiding, leathercraft, metalcraft and plastics, clay modeling, and woodwork. In January 1944, new specifications were drawn up for 5,000 each of these and additional kits for block printing, model plane making, fly tying, and show card lettering. Other kits were ordered to meet needs in 1945.

Because of special conditions during transportation of troops, arts and crafts kits for transports were authorized. These kits were planned as bulk supplies to be distributed on request by the ship's chaplain. Artist, leather, wood, knotting, and braiding kits were provided. In December 1943, steps were taken to include arts and crafts materials in the Army Exchange Service catalog.

In January 1944, the Special Services Division collected approximately 65,000 paintings, illustrations, and prints which were donated by various civilian agencies in this country. Of these prints, 10,000 were made available to American prisoners of war through the International Young Men's Christian Association. The remainder were made up into lots of 60 each and distributed to general hospitals in the United States.

Music officers increased during the year from 32 to 66, about one-half of whom were assigned outside the continental United States. One music officer was assigned to assist the Surgeon General's office in the reconditioning program. The number of Army Hit Kits sent overseas increased from 4,550 to 58,500 monthly. Each overseas kit contained 25 copies of the lyrics edition and 1 copy of the music edition. Domestic distribution of kits declined from 26,420 to 19,000; each of these kits contained 50 copies of the lyrics edition and 1 copy of the music edition. Overseas units were also provided 3,763 orchestrations of Hit Kit music editions. Posts, camps, and stations in the continental United States were furnished with 1,375 of these orchestrations. Additional orchestrations were sold by Army exchanges. A hymnal containing 12 of the best known hymns of an undenominational character were made into a folder for the Chief of Chaplains.

V-disks were developed by the Special Services Division during the past year. The first release of these recordings were issued in October 1943, and consisted of 1,800 packages of thirty 12-inch double-faced records for distribution overseas and 1,200 albums of 6 records were distributed within the United States. The domestic release continued as a package of 6 records until June 1944, which would be the last month: overseas distribution increased to 8,000 packages of 20 records each. Recording material for these V-disks were obtained from special recording dates, radio program rehearsals, existing phonograph record "masters," transcription libraries, and regularly scheduled radio programs.

Since the supply of musical instruments was critical, gift collection drives were made from which 6,573 instruments were obtained. Retailers and jobbers of music equipment, as well as the Quartermaster Corps, purchased instruments when available.

The Entertainment Section of Special Services Division distributed to all overseas commands and to posts in the United States many pub-

lications, which included collected skits, quiz contests, one-act plays, and hints on the production of soldier shows. Folios, distributed two or three times monthly, were collections of the latest skits, short radio plays, quizzes, and Broadway plays written by professionals and released to the Army for distribution exclusively to overseas stations. Two new volumes of the "Soldier Shows" series were written and distributed. Guides for entertainment and shows were prepared for hospitals, reception centers, staging areas, and transports. Each guide was designed to meet the entertainment problem of a particular situation or location. The Blue Print Special, a new periodic publication containing a soldier musical comedy or revue was begun.

Four soldier show conferences were held for service command officers and 29 for posts, camps, and stations during the year. Self-entertainment was stressed at these meetings. Catalogs of supplies were also developed, making it possible to order specific items in the form of kits to meet various needs. Large orders were received from overseas. A hospital soldier show program was being developed at the end of the year which would stress not only maximum entertainment value but also maximum recuperative value. Officer theatrical specialists were stationed overseas to stimulate and maintain the soldier show program.

Mobile soldier shows including Hey Rookie, Stars and Gripes, and This is the Army, were trained and sent to various overseas theaters. Also 178 units of professional entertainers composed of a total of 852 people were sent overseas. Of the personnel sent abroad, 93 were stars of stage, screen, or radio, who traveled as guest artists and the remaining were salaried personnel employed by USO Camp Shows, Inc. For purposes of comparison, it may be noted that in 20 months preceding the fiscal year 1944, 73 entertainment units, comprised of 465 people, were sent overseas. By the end of the year all camp shows entertainers or entertainment units were requisitioned to meet the particular requirements of the various theaters. The artists were obtained by USO Camp Shows, Inc.

The following domestic professional entertainment program was in effect during 1944:

1. Victory Circuit: Available to all posts, camps, and stations, except those situated in metropolitan areas, with a troop strength of 1,500 or more. Units of the Victory circuit were provided on the average of 1 a month, and were composed of from 15 to 20 performers, presenting variety-type programs.

2. Blue Circuit: Available to all posts, camps, and stations, except those situated in metropolitan areas, with a troop strength under 1,500. Units had approximately 5 entertainers, presenting variety-type programs. Blue circuit units were prepared to present performances in any type of theater, mess hall, recreation building, service club, or similar facility, as well as outdoor gun emplacements and bivouac areas.

3. Hospital Circuit: Available to all general hospitals. Units of the hospital circuit were provided on the average of 1 every 2 weeks and were composed of approximately 15 to 20 entertainers, presenting carefully selected variety-type programs in wards and recreation halls of general hospitals. All general hospitals were automatically in-

cluded on this circuit. No other Army installations were eligible for inclusion.

4. **Celebrity Circuit:** Available primarily to all general hospitals, and to posts, camps, or stations when practicable. Stars of stage, screen, and radio were equitably assigned as they volunteered their services. Whenever cancellations or open dates occurred on general hospital itineraries, other Army installations were included.

5. **Sketching Artists Circuit:** Nationally known artists were made available to all general hospitals to sketch patients in wards. Only general hospitals were eligible for inclusion.

6. **Supplementary Entertainment:** Itineraries of Camel Caravan, Shell Show, and House of Magic were subject to commercial routing, and were available to as many Army installations, including general hospitals, as the schedules permitted.

7. **Spot Shows Circuit:** Available to specially designated posts, camps, and stations with particular entertainment needs, such as staging areas and ports of embarkation, provided such installations were in the vicinity of New York and San Francisco for one-night stands.

The Special Services Division of the ASF worked with the American Red Cross, United Service Organizations, the Joint Army and Navy Committee on Welfare and Recreation, and with other Federal and civilian welfare organizations. Little or no facilities for recreation were built during the past year.

The Army Service Forces trained approximately 4,500 men, making up 41 companies, for assignment to overseas theaters and armies for special services activities by the end of the fiscal year. During the year 2,334 officers and 411 enlisted men completed the athletic and recreation course at the School for Special and Morale Services. War Department Circular 240, issued on 4 October 1943, placed responsibility on post, camp, and station commanders for maintaining special service programs.

To supplement this measure, 2 special service officers were provided for each unit of 2,000 or more troops, and for posts, camps, or stations of 2,000 or more troops population. One served as athletic and recreation officer and the other as orientation officer. In smaller camps 1 officer was designated as special service officer in addition to his other duties. Overseas theater commanders, wherever practicable, placed in each unit sent to isolated areas some individuals with entertainment experience either in the theatrical or musical field.

United States Army Motion Picture Service

Aside from their educational and training value, motion pictures remained the most important entertainment medium for soldiers. Under a standing arrangement, the United States Army Motion Picture Service obtained sufficient prints to show pictures in all War Department theaters in the United States within 30 days of their national release. Attendance during the fiscal year totaled nearly 229 million admissions, a 38-percent increase over 1943. For overseas audiences, the American film industry donated 728 prints of new screen shows each month. During the year 183,187 complete programs were exhibited, representing the best of the product of all national motion-picture distribution.

By the end of the fiscal year the Army Motion Picture Service was operating 1,175 theaters; 72 of these were permanent buildings, 790 were wooden structures, 179 were purely temporary structures, and 134 were miscellaneous facilities including tents and open-air places. Post theaters during the fiscal year were also used for 9,555 performances of camp shows units, 1,374 local entertainment performances, 649 posts events of different types, and 187 radio broadcasts.

Army theaters were operated entirely by enlisted men and women, most of whom performed this work in addition to their normal duties. No civilian personnel were employed in theaters. Maintenance during the fiscal year involved 4,459 servicing visits and 615 emergency calls. Visits to Red Cross and Navy theaters, served by the Army Motion Picture Service maintenance organization, amounted to more than 800. Losses of film from fire and other causes were almost negligible—about 67,496 feet of film out of 3½ billion feet projected during the year.

Among the nonroutine services performed by the service during the fiscal year was the showing of a number of regular Hollywood films with Italian captions to Italian prisoners of war.

Control of Nonappropriated Funds

On 1 June 1944 a series of War Department directives were published bringing all activities connected with nonappropriated funds for the first time under systematic control. Army Regulations 210-50 on nonappropriated funds set up a basic plan for operations, defined classes of funds, and set forth how they were to be administered. Army Regulations 210-65 on Army exchanges at posts, camps, and stations and Army Regulation 210-70 on service clubs and libraries were rewritten, while revisions were also made in the regulations governing the United States Army Motion Picture Service and post messes. Current policies on the control of nonappropriated funds were announced in War Department Circulars 218 and 219.

These new directives had the following basic features. In the first place, they established the principle that revenue-producing activities such as Army exchanges and Army Motion Picture Service existed primarily to perform services; at all times they were to be kept financially solvent, since they had the nature of businesses. In the second place, to the extent that such enterprises produced profits, those profits were to be used for the benefit of the post at which the profits were created, subject to limitations on accumulations of working capital. Amounts in excess of the established limitation on working capital were paid to the Army Exchange Fund and to a new Army Central Welfare Fund.

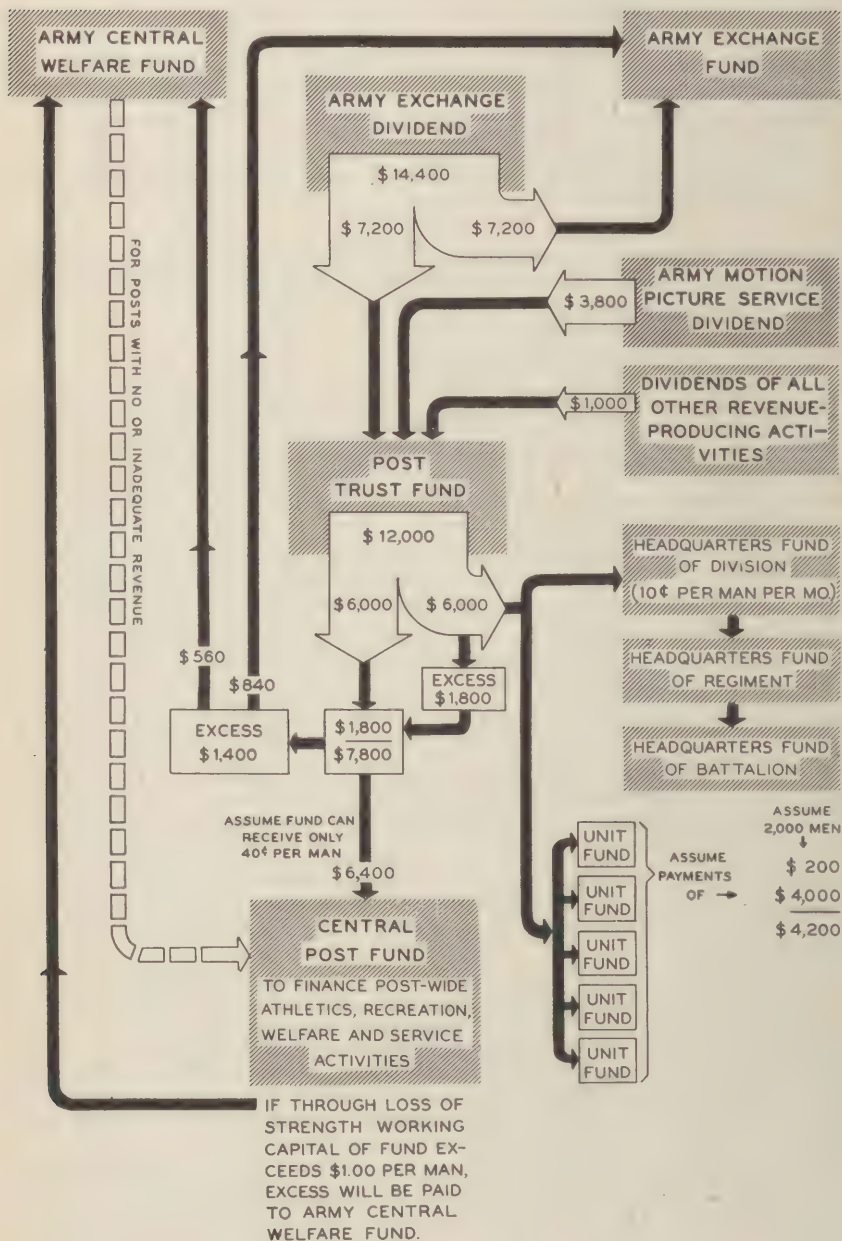
In the third place, dividends of Army exchanges were fixed on the basis of a formula which would have the effect of requiring Army exchanges to pay out excess capital during the period of the war. This capital was paid, in part, to the Army Exchange Fund so that that fund might liquidate outstanding obligations to the Defense Supplies Corporation and, in part, to post trust funds which, in turn, made distributions to post welfare funds.

The number of post welfare funds was limited to a single central post fund for the benefit of all personnel stationed at a post, to headquarters and unit funds for the benefit of personnel of specific organ-

CHART 49 FLOW OF NON-APPROPRIATED FUNDS JUNE 1944

ASSUMED STRENGTH - 16,000 MEN

(ALL FIGURES ASSUMED)



izational units, and to post hospital funds. Limitations were established on the amount of net working capital which might remain in any of these nonappropriated welfare funds based upon the strength of the organizations or installations which benefited from them. Sums in excess of current limitations were paid to the Army Central Welfare Fund; it, in turn, might make grants to less fortunate units and installations. Current working capital limitations were established for central post funds at \$1 per man and for hospital funds at \$3 per authorized bed. In the case of unit funds, no additional payments might be made if the fund exceeded \$3 per man. Current limitations on payments to central post funds and unit funds were 50 cents per man per month.

As part of the reorganization of nonappropriated funds, the former post hospital fund was segregated into two separate funds—a subsistence account and a hospital fund. Payments for subsistence of patients in hospitals and hospital detachments were paid initially to the subsistence account. Each month \$18 per authorized bed might be paid by the subsistence account into the post hospital fund. Amounts kept in excess of \$3 per authorized bed were paid by the post hospital fund to a central hospital fund for redistribution.

Under the new controls, sums in nonappropriated funds in excess of current limitations were paid either to the Army Central Welfare Fund or the Central Hospital Fund. Thus, as strength at posts declined, excessive amounts of nonappropriated funds were drained off.

The Army Exchange Fund, in order to obtain money to permit liquidation of its indebtedness to the Defense Supplies Corporation, received 50 percent of all dividends paid by the local Army exchange, plus a proportion of the excess funds remaining in the post trust fund after distribution to all welfare funds. The proportion of the excess going to the Army Exchange Fund was equivalent to the proportion the Army exchange contributed to the total amount in the post trust fund for the month.

The Army Central Welfare Fund was under the supervision of a board of directors consisting of the Budget Officer for the War Department as chairman, and representatives of the Army Ground, Air, and Service Forces. The Director, Special Services Division, represented the Army Service Forces on the board and also acted as custodian of the Army Central Welfare Fund.

The purpose of the new system was to prevent the accumulation of large sums of money in nonappropriated funds and to encourage current payments from such funds for the benefit of personnel currently stationed at a post. Under the new controls, it was no longer possible for a post commander to accumulate large hoards of money for some major permanent construction project. The Army Central Welfare Fund, in turn, provided a mechanism for redistributing funds from posts having excessive amounts of nonappropriated funds to those posts with an inadequate amount.

MORALE SERVICES

In 2½ years of war there was a steadily increasing appreciation of the important part which mental conditioning of troops played in the development of a fighting army. At the outset, the problem

of maintaining troop morale was conceived primarily as one of offering soldiers in training a planned program of useful diversion and entertainment which would help to ward off boredom and homesickness. This program allowed ample opportunity for sports and games, supplied motion pictures in abundance, provided various means of satisfying the soldier's craving for news, and offered opportunities for maintaining civilian hobbies and developing new ones. The value of such activity in reducing the shock of transition from civilian to military life was recognized by everyone concerned.

The realization subsequently grew that maintenance of morale involved not only diverting soldiers but also developing in them positive attitudes toward the war and an understanding of the individual's place in the total national effort. Research studies revealed that the Army of the United States in this war was different in essential respects from other armies in American history. Its level of education was measurably higher. More important, the attitudes of its members reflected the fact that they had become of age in the aftermath of disillusion which followed the First World War, that they had absorbed some of the cynicism of the thirties, and that their need for mental and spiritual preparation for war was quite as great as their need of training in the skills of soldiering. Finally, the tactics of the enemy made it evident that propaganda designed to affect the will to fight was one of his weapons just the same as planes, guns, or tanks.

During the fiscal year 1944 research teams of the Morale Services Division operated in every major theater overseas. Research studies among troops were used in two ways: First, to report specific problems and the over-all status of morale in theaters to theater commanders; and second, to provide data for Washington headquarters. Research studies also continued among troops in the zone of the interior; many were conducted at the specific request of Army Ground Forces and Army Air Forces. On the basis of results revealed by these attitude studies morale services work was fitted to the needs of troops wherever they might be. All of this work was intended to orient the soldier in his military environment, to instill in him a belief in his mission without which he was merely a machine going through motions, and to prepare him to take up constructive citizenship when he returned to civilian life.

This process of mental conditioning called for a program of the broadest scope. All possible media of instruction and information were used—the printed word, radio, movies, talks, discussions, schools.

At the beginning of the fiscal year morale services was serving what was essentially an army in training; by the end of the year it was serving an army in action. Yet large concentrations of troops in the zone of the interior demanded continued attention to their particular problems.

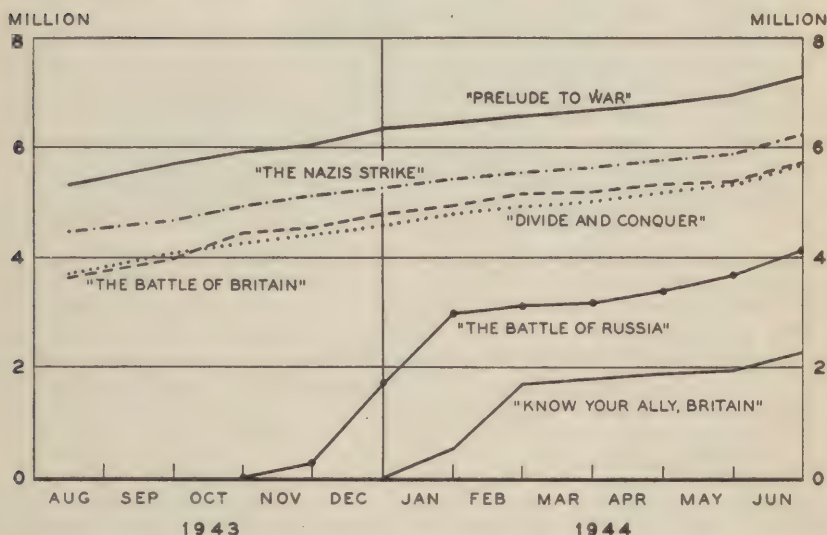
In all overseas theaters organizations were functioning by the end of the year designed to meet the information and education problems of the particular area.

During the fiscal year four more feature-length war information films were released, bringing the total up to 30 June to 8. Two of these releases were in the Why We Fight series—The Battle of Russia and The Battle of China. The other two films were of a somewhat

different nature. One, *Know Your Ally—Britain*, revealed the essential differences between Americans and the British and pointed to the important fundamentals upon which both nations agreed. The other film, *The Negro Soldier*, portrayed the important part the Negro has played in national life and, more specifically, his stake in the present conflict. Under existing regulations attendance of all military personnel was required at these feature length films. They were also made available to the Navy, the Marine Corps, the Coast Guard, and to industrial plants working on War Department contracts.

CHART 50

TROOP ATTENDANCE AT WAR INFORMATION FILMS



The Army orientation course was set up in 1944 as a compulsory part of military training. Regiments and equivalent organizations were provided with an officer to direct orientation activities. Posts, camps, and stations having populations of more than 2,000, not organized in T/O units were also directed to designate orientation officers. Materials supplied for use in this program and "pilot teams" provided assistance in the actual conduct of orientation training. Special programs were designed for reconditioning hospitals, redistribution stations, overseas casual replacement depots, etc.

Materials supplied to orientation officers were of several kinds. Four kits containing both current and background information were distributed on the basis of one to a company or comparable organization. Five issues of *What the Soldier Thinks*, a monthly digest of War Department studies on the attitude of troops, were published and made available down to and including company commanders. A monthly digest was also available to all company officers. This stressed techniques of conducting orientation sessions and provided a medium for bringing original ideas developed in the field to orientation officers everywhere.

Preparations for Invasion

Planning for the invasion of Europe meant mental as well as physical preparation for the struggle to drive the Germans from France. All possible media were used by the Supreme Commander to impress upon his forces the importance of the task before them. The research branch of Morale Services Division made studies among troops with combat experience in Tunis and Sicily and among other troops who had no combat experience. These findings were utilized in the program developed within the European Theater of Operations. A highly qualified officer sent to England by the Morale Services Division was assigned as an enlisted replacement in one of the divisions which was to spearhead the attack. This officer then became the chief of the orientation branch in the European theater. His observations plus the research studies guided the selection of particular objectives upon which continuing efforts were concentrated.

The basic ideas were agreed upon by Supreme Headquarters and a 5-week intensive program was started on 1 May. The topics developed progressively toward the hour of attack. Each week Yank carried special articles and stories centered about the theme for that week's subject. Stars and Stripes, the daily newspaper in the European theater, published a four-page orientation supplement each week. The radio network in England broadcasting 12 hours each day to American troops keyed its programs to the same preinvasion themes by offering dramatizations of the basic orientation material. Five pamphlets, entitled "Army Talks," were prepared and distributed one each week to junior officers throughout all units. These pamphlets served as the basis for talks by officers to enlisted men during the orientation hour. The last issue was distributed to every man taking part in the invasion operation. The assault forces were prepared in body and mind for the liberation of Europe.

Information materials

The Army weekly, Yank, published by and for enlisted men of the armed forces, increased its scope to global coverage in 1944. By the end of the year it was published in 14 editions in 11 countries. Three editions were published in the home office, New York, and mats were sent out from which the overseas editions were largely made up. Sold only to personnel of the armed forces, Yank circulation more than tripled during the year from 400,000 to approximately 1,500,000 copies per week. In November 1943 a plaque for distinguished service to American letters was awarded to Yank by the Saturday Review of Literature.

In addition to having oversea printing and distributing offices, Yank maintained a global coverage with its own correspondents to report about every area of American troop concentration. Yank correspondents landed with the first wave of American troops on Attu and in New Britain. A Yank correspondent was the only newspaperman to fly on the Schweinfurt raid.

The circulation of Newsmag, another source of information and news to troops which emphasized particularly developments on the various battle fronts, jumped from 83,000 to almost 210,000. Newsmag was distributed to Army units in the United States and overseas, to the Navy, Marine Corps, Coast Guard, and industrial plants. In addi-

CHART 51

"YANK" CIRCULATION

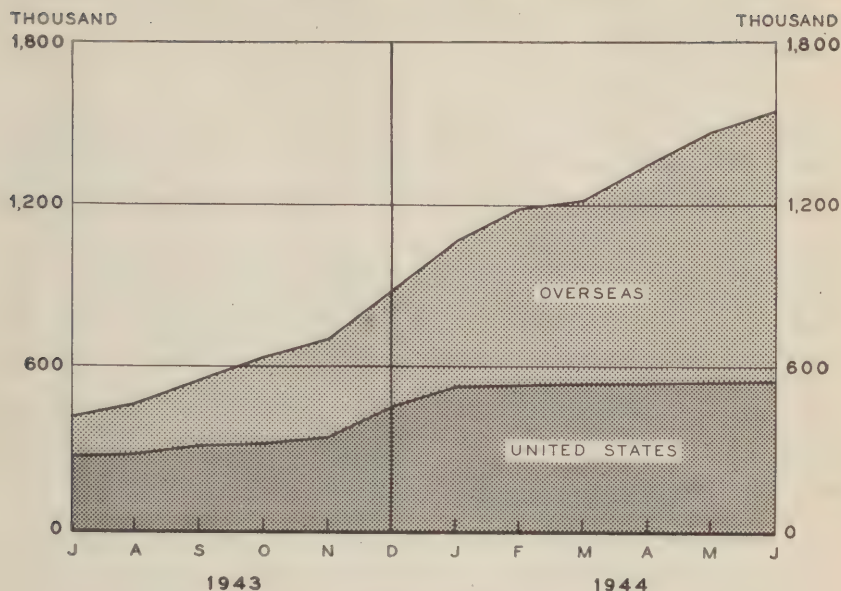
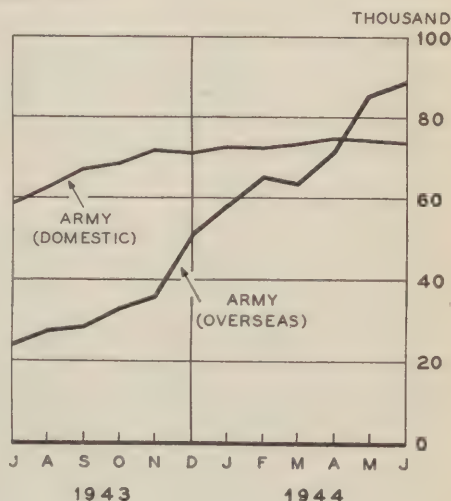


CHART 52

CIRCULATION
OF
"NEWSMAP"
AVERAGE WEEKLY
CIRCULATION
FOR EACH MONTH



tion to its domestic editions, Newsmap was printed overseas from negatives and mats air mailed from the United States.

To keep up a steady flow of objectively handled news and features to Army radio stations and Army newspapers all over the world, the Army News Service of the Morale Services Division sent out a daily total of 87,000 words by cable, by wireless, and by a daily air-mail feature made up of news clipped from domestic papers. In addition,

it sent news pictures by air mail to large Army papers in all areas and maintained a radio photo service to Australia, Hawaii, and England from the New York office. Editors of some 2,000 camp newspapers in the United States were provided with art work, feature materials, and editorial suggestions.

Armed Forces Radio Service

Radio broadcasting was brought to even the most distant outposts during the fiscal year 1944. A transmitter was set up on the Anzio beachhead at the time when the forces there were under the most severe fire. At the beginning of the year there were no stations serving the American forces in the China-Burma-India theater whereas at the end of the year there were 12. Special permission was received from the Indian Government to build stations at 6 points in that country. This network supplied a primary coverage of 80 percent of all American troops in India. In Burma 2 transmitters were installed; in China, 4; and in Ceylon, 1.

All told, by 30 June 1944, there were 102 American expeditionary stations, 2 Navy stations, 81 Government and commercial stations, and 229 sound installations providing programs of the armed forces radio service to troops overseas. In the 1 month of June 1944 more than 27,000 transcriptions were shipped to these outlets.

Each week 42 hours of programs featuring the very best entertainers and artists were transcribed. These same programs were also heard in many Army hospitals as part of the rehabilitation program and on board transport and hospital ships. Some of the programs were regular commercial broadcasts; others were specially prepared for the armed forces. The services of the Nation's foremost entertainers were donated to these programs. Special events broadcasts sent overseas included the World Series and the Kentucky Derby. Short-wave broadcasting from the east and the west coasts to forces overseas totalled more than 2,200 hours per month in June 1944.

Educational services

During the year educational operations of the Morale Services Division were greatly expanded to serve troops both at home and abroad. Seven new branches of the United States Armed Forces Institute were added. All told, 200,000 service men and women were enrolled with the USAFI in 1944, an increase of about 160,000 in the previous year. The original list of 64 courses was replaced and augmented by 141 correspondence and self-teaching courses in high school, technical, and standard college subjects. By 30 June 1944, enrollments were being received at the rate of 25,000 a month. The Armed Forces Institute by the end of the year was distributing 100 different texts, published as educational manuals edited and recommended by a contract civilian staff for classroom instruction. All told, 12 million texts were purchased for use in the off-duty education program. The institute also provided educational materials during the year for American soldiers imprisoned by the enemy or interned in neutral countries.

The Armed Forces Institute distributed approximately 15 million brief introductory training manuals in 24 foreign languages together with 600,000 advanced manuals in 5 languages. Phonograph records

to aid in learning foreign languages were also distributed to troops overseas. A program of providing guides to foreign countries was conducted during the year. New guides were prepared on Panama, Alaska, New Guinea, the Solomon Islands, and Italy. On D-day the assault troops carried with them a newly published guide to France.

A new series of publications designed to aid in conducting off-duty discussion programs was introduced in 1944. Called the GI Round Table Series, guides were developed by the American Historical Association under contract with the War Department. Six guides were completed by 30 June 1944 and about 80 were planned for publication before 30 June 1945.

Motion Picture Activities.

The Army-Navy Screen Magazine, a biweekly film short, was produced by the Morale Services Division through the Signal Corps and distributed by the Army Motion Picture Service. A 45-minute program of education and information for free showing to troops overseas was developed entitled the "GI Movie Weekly." This release had a distribution of 140 prints in July 1943, which grew to 206 prints by June 1944. Estimated weekly attendance was 80 percent of all armed troops overseas. The movie was also shown in service clubs and other recreational facilities of posts in the United States. Another feature introduced during the year was a humorous educational cartoon entitled "Private SNAFU." The activities of all branches of the armed forces and of the United Nations were shown in these movie features.

Training.

From the time of the expansion of the Army in 1940 orientation has been conceived as a command function. The role of the Army Service Forces has been to provide materials for off-duty education and guidance to commanders in fulfilling their responsibilities. In addition personnel has been trained to assist commanders in meeting their responsibilities. This training has been performed at the School for Special and Morale Services at Lexington, Va. During the fiscal year 1944, 1,747 officers and 126 enlisted men completed an intensive course at this school covering the whole range of the content and technique of orientation and education. In order to meet the demand for trained personnel the first four courses were limited to 2 weeks. In January 1944 the course was extended to 4 weeks. Reconditioning officers and enlisted assistants were also trained at the school. Since a large portion of the Army was overseas when this training program went into effect, many overseas commanders requisitioned personnel on temporary duty to establish schools for their own officers. In the North African theater more than 400 officers attended one session of the school at Naples. In the Central Pacific theater some 300 officers had completed training by 30 June 1944 in the school located at command headquarters.

The War Department sought to preach no gospel to American soldiers. It provided an objective presentation of the facts in the best American tradition, believing that the soldier who was well informed in the causes and conduct of the war would have more zest in his training and combat and return to his home a better citizen.

Chapter 14. ADMINISTRATIVE SERVICES

As chief law officer of the War Department, the Judge Advocate General supervised the administration of military justice throughout the Army, rendered legal advice to the Department and represented it in civil suits, and supervised the settlement of claims. He was custodian of all records of trials by general courts-martial and of all title documents to Government land under control of the War Department.

Military Justice

Early in the war effort several principles were established for the guidance of general officers having court-martial responsibility and of judge advocates. The first of these was that all unnecessary trials should be avoided. Secondly, all trials that were necessary should be fair, prompt, and impartial. Punishments should be appropriate to the crime without being unnecessarily severe. In the fourth place, there was to be uniformity among sentences. Fifthly, military justice was to be administered in such a way as to promote discipline and at the same time retain the confidence of the American people in the Army's court-martial system. Finally, it was determined to restore convicted men to military duties as soon as possible.

By the fiscal year 1944 it was evident that these objectives were being realized. Whereas in 1943 there were 9 general courts-martial per 1,000 soldiers, in the first 6 months of the calendar year 1944 there were 3 general courts-martial per 1,000. For the calendar year 1943 the average lapse in time for the Army as a whole between the date of confinement of a soldier and the date of his sentence by general court-martial was 28.8 days. In the first 6 months of the calendar year 1944 this time had been reduced to about 23 days. Sentences have as a rule been uniformly applied by general courts. Where this has not been the case changes have been recommended by the Judge Advocate General's Office.

The principal problem rising during the year was that of sentences for officers. In a peacetime Army dismissal from the service meant in effect the barring of an officer from his profession. In wartime, with the great expansion of officers on duty with the Army of the United States for the duration only, dismissal from the service was not an adequate punishment.

In the fiscal year 1944 the Judge Advocate General's Office reviewed 18,340 cases of general courts-martial for legal sufficiency. The desirability of extending clemency was also considered. The Boards of Review examined 2,644 cases, and an Assistant Judge Advocate General and the Judge Advocate General personally reviewed many of these cases. The number of general court-martial cases was 50 percent greater in 1944 than in 1943.

Except in unusual cases, examination of a trial record for legal sufficiency was completed within 24 hours of its receipt. The Boards

of Review were likewise current in their work at the end of the year. A fifth Board of Review was set up in the Judge Advocate General's Office during the year, and the four boards of review set up overseas continued to function as before.

There were 22,000 persons tried by general court-martial throughout the Army in the fiscal year 1944. Of this total, 19,610 were enlisted men, 2,010 were officers, 267 were general prisoners already, 50 were prisoners of war, and 31 were civilians.

Military Affairs

During the fiscal year 1944 a number of important items of new legislation affecting the Army called for comment during consideration and after approval. These included the retirement pay law (Public Law 101, 78th Cong.), the soldiers' vote law (Public Law 277, 78th Cong.), amendments to the Servicemen's Dependents Allowance Act (Public Law 174, 78th Cong.), the death gratuity act (Public Law 198, 78th Cong.), the creation of the Women's Army Corps (Public Law 110, 78th Cong.), and the creation of the Pharmacy Corps (Public Law 130, 78th Cong.). Pending legislation was also considered, such as the consolidation of the War and Navy Departments and amendments to the Soldiers' and Sailors' Civil Relief Act.

Other questions taken up in written opinions during the year were controls over excessive spending by American soldiers overseas; the disposition of captured enemy equipment; limitation of soldiers' deposits; political activity by military personnel and application of the Hatch Act to per diem civilian employees; review of dismissals and discharges other than by courts-martial; and censorship of mail of military personnel.

During the year a compilation of selected opinions of the Judge Advocate General and decisions of the Comptroller General construing the pay readjustment acts of 1922 and 1942 were published. Two compilations were also prepared of opinions interpreting the statutes on retirement of officers of the Regular Army.

Many legal questions arose in 1944 from American operations overseas. One such problem concerned the personnel status and rights of the individual soldier and of the civilian accompanying our forces under the local laws of foreign nations. The Judge Advocate General worked with the Department of State in handling agreements governing the presence of American troops in foreign territory. A unique field of research was the punishment of war criminals, including the definition of war crimes, appropriate tribunals for the trial of offenders, and procedures in the investigation and collection of evidence.

One of the most complete libraries in the world on the law of war was maintained by the Judge Advocate General. Letters and opinions were prepared on the treatment of liberated and conquered territories, permissible means of injuring the enemy, and clauses to be included in armistice terms. Another recent field of activity was habeas corpus cases involving alleged infringement by the Army of the constitutional rights of citizens, including the exercise of military law over merchant seamen and other civilians, evacuation and exclusion of citizens from military areas, and the discharge of suspected subversives from war plants.

Contracts

Most of the legal questions concerning contracts in 1944 involved termination provisions, the disposition of surplus property, and the authority of officers handling termination settlements. Additional opinions were rendered on the scope of authority for foreign procurement and the application of American laws of a general character to such purchases. A considerable increase in the volume of appeals by contractors to the War Department Board of Contract Appeals necessitated an increase in the personnel of the Board and its division into panels; accordingly, there was considerable additional work for the Office of the Judge Advocate General representing the War Department before the Board. New bond forms were prepared in 1944 and a large number of official and contract bonds approved.

The passage of the War Labor Disputes Act of 25 June 1943, required complete revision of the manual for the guidance of War Department representatives operating plants taken over by the Government. The Judge Advocate General also assisted in the preparation of orders and instructions governing individual cases. In all operations except one in 1944 complete cooperation was obtained during the period of War Department operation and without exception all plants and facilities were run without cost to the Government. No claim of any character was asserted against the Government as a result of the possession, operation, and control of war plants.

Tax Problems

Throughout the year negotiations were carried on with various States about the application of State tax laws to War Department facilities and contractors. Except in three cases these negotiations concerned the application of previously made agreements to particular cases. Arkansas finally agreed during the fiscal year to exempt certain inter-State sales and also to exempt all sales to cost-plus-a-fixed-fee manufacturing contractors from State taxes. Discussions on the same subject were proceeding favorably with the State of Alabama at the end of the year, but there was no indication that West Virginia would make any concessions.

In 1944 the States and their political subdivisions were particularly active in attempting to tax gasoline sold to the United States and in attempting to tax Government-owned facilities and war plants. In May 1944 the Supreme Court in the case of *United States and Mesta Machine Co. v. County of Allegheny, Pa.*, held that facilities owned by the United States but located in a privately owned plant were not subject to local taxation. Even before this provision, several States were persuaded that Government-owned property should not be taxed even though in the hands of private contractors. Several States made specific effort by legislation or administrative action to tax gasoline sales to the United States. Either through administrative concessions or through modification of proposed legislation it was possible in large part to avoid the impact of these taxes. In order not to endanger sales of tax-free cigarettes to military personnel, post exchanges and other Army agencies agreed not to sell cigarettes free of State taxes to civilians, with certain exceptions. The State of Michigan was persuaded not to tax debts due from the United States to cost-plus-a-

fixed-fee contractors, and substantial amounts of unemployment compensation tax paid by contractors to the State of Ohio under discriminatory administration of the Ohio Unemployment Compensation Tax were recovered.

By act of Congress virtually all Government purchases were eliminated from Federal excise taxes during the year. The retained exemptions were recommended by the War Department. Because of this fundamental change in Federal tax policy, it was necessary to rewrite procurement regulations on taxes and to draft new tax articles for Government contracts. The application of Federal taxes to post exchanges caused little difficulty in 1944, but the status of officers' clubs and officers' messes remained unsettled on 30 June. Because of far-reaching changes in the Federal individual income tax, a number of circulars covering the application of these taxes to military personnel were prepared and assistance was rendered to officers and enlisted men in handling income-tax problems.

Patents

The Judge Advocate General collaborated with the Department of Justice in the defense of 16 patent infringement suits filed against the Government, and in the prosecution of 8 patent interferences in the United States Patent Office involving inventions affecting the procurement activities of the War Department. Some 600 cases arising under the Royalty Adjustment Act of October 31, 1942, were reviewed and procurement regulations on patents were revised.

Representatives of the Judge Advocate General's Office sat with the Army and Navy Patent Advisory Board which recommended a classification of secrecy for certain patents filed with the Commissioner of Patents. The Judge Advocate General's Office was the office of record for tenders of inventions made to the Secretary of War. Approximately 10,000 applications were examined by the Army and Navy Patent Advisory Board during the fiscal year 1944 resulting in recommendations of over 1,700 secrecy orders. Some 1,500 invention disclosures were received from the Director of the Office of Scientific Research and Development. These were reviewed by various technical services and appropriate patent action then filed. Numerous royalty-free licenses donated by patriotic patent owners were received and recorded during the year. In addition, 150 applications for patents were filed covering the inventions of military and civilian personnel under the jurisdiction of the War Department.

Litigation

During the fiscal year the Judge Advocate General represented the War Department as counsel in 171 formal administrative proceedings for regulatory agencies of the Federal and State governments having jurisdiction over common carriers. Ninety of these proceedings were brought to obtain rate reductions or prevent increases in rates; the remaining 81 proceedings involved applications by common carriers to abandon railroad lines. In addition, the Judge Advocate General cooperated with the Department of Justice in handling 1,393 court cases affecting the interests of the War Department during the year. Of this total, 636 cases involved suits against cost-plus-a-fixed-fee contractors; these suits were defended because the Government would

ultimately be required to pay the amounts of any judgments rendered against the contractors. The other cases included 41 renegotiation cases, 112 admiralty cases, 261 war fraud cases, 44 claims cases, and 53 bankruptcy proceedings.

Lands

In 1944 the Judge Advocate General gave formal consideration to more than 1,500 legal questions involving the acquisition, disposition, care, and administration of lands under the control of the War Department. These subjects ranged from the relocation of utility lines and the granting of easements to flood control and the sale of real estate. The Judge Advocate General received some 26,000 sets of title papers for classifying, indexing, and filing during the year.

Claims

An act of Congress approved 3 July 1943, embodied in a single statute authority for the War Department to settle all claims not in excess of \$500 or in time of war not in excess of \$1,000, except those of military and civilian personnel of the War Department for loss incident to their service. Under the provisions of this law 338 specific delegations of authority to approve and disapprove claims were made by the Secretary of War. In addition to a general delegation in Army regulations to the commanding generals of service commands, commanding officers of air service commands, and commanding generals of territorial departments, final action by each of these officers was subject to appeal to the Secretary of War. As a result of this decentralization the lapse of time between the filing of a claim and its approval or disapproval was reduced from an average of 125 days in December 1943 to an average of 75 days in June 1944.

During the fiscal year action was taken on 43,148 claims, of which 25,304 were approved for a total of \$3,464,810. A complete revision of all claims regulations resulted in substantial procedural improvements. Provision was made for a single investigation of all service-connected accidents and incidents. An instruction program for claims personnel was set up in each service command and each air service command.

Claims commissions consisting of one to three members considered claims of inhabitants of foreign countries for personal injury and property damage up to \$5,000, under an act approved 22 April 1943. By 30 June 1944, 26,457 claims were filed overseas, of which 20,195 were approved for a total sum of \$2,293,084. The Judge Advocate General trained and selected officers to perform investigative and administrative functions in the consideration of claims in foreign theaters. Reports were also made on claims bills filed in Congress.

Legal Assistance

During the fiscal year 1944 the legal assistance plan established in March 1943 came into full operation throughout the Army. By 30 June 1944 there were over 1,100 legal assistance officers operating at army posts, camps, and stations in the United States and overseas. It was estimated that over 2½ million matters were handled by these officers during the year. Numerous civilian lawyers volunteered their services to help the legal assistance officers appointed from within the

Army. A Certificate of Appreciation for this aid was awarded by the Secretary of War to each State bar association. Reports indicated that legal assistance had greatly benefited the morale of servicemen by relieving them of worry and uncertainty over legal problems. Commanding officers of Army hospitals and other organizations stated that the legal assistance service resulted in reducing the number of unauthorized absences and accelerated the recovery of sick and wounded men.

Publications

The Bulletin of the Judge Advocate General, issued monthly, contained opinions and digests of the Judge Advocate General and of the Boards of Review, the Attorney General, the Comptroller General, and Federal and State courts. This bulletin was distributed to Judge Advocates serving at Army installations and with troop units. A weekly current legal bulletin taken over from the Office of the Under Secretary of War in June 1943, provided legal information to procurement officers. Two technical manuals were published during the year, one dealing with cases on military government and the other with treatises governing land warfare. The manual for courts-martial was reprinted with corrections during the year.

Finally, a compilation was begun during the year of holdings and opinions by the Board of Review; 26 volumes were prepared for publication containing all opinions from July 1929 to January 1944.

Rehabilitation Centers

During the fiscal year 1944 the 9 rehabilitation centers previously located 1 in each service command were consolidated into 6. By the end of the year a total of 19,000 general prisoners had been sent to these centers. Some 6,000 had been restored to military duty, of whom only 4 percent had again become prisoners.

Generally speaking, prisoners sentenced by courts-martial to 6 months' confinement or less were held in guard houses on posts. Prisoners sentenced to more than 1 year for serious offenses not of a purely military character were sent to penitentiaries or other Federal institutions. All other general prisoners were usually sent to rehabilitation centers, depending upon the possibility for rehabilitation and restoration to duty. Those prisoners whom it proved impossible to rehabilitate were sent to disciplinary barracks. Three new disciplinary barracks were opened during the year, one at Greenhaven, N. Y., in October 1943, another at Camp Hood, Tex., in May 1944, and a third at Fort Missoula, Mont., in June 1944. All three were branches of the disciplinary barracks at Fort Leavenworth. Total prisoner strength at the end of the year in disciplinary barracks numbered some 4,500.

The program of rehabilitation at rehabilitation centers was determined by service commanders under the general supervision of ASF headquarters. Modern conceptions of penal administration were enforced at these centers and special attention was given to the enforcement of rigorous discipline. Training was of three types: Literacy training, military training, and vocational training. Training in weapons firing was permitted for those in the honor company. In gen-

eral all training was closely related to the military duties which the men would perform upon restoration to duty.

By the end of the fiscal year 1944 it was well demonstrated that the rehabilitation center method of treating prisoners was a success. In effect the lodging of a general prisoner in a rehabilitation center amounted to indeterminate sentence. Ordinarily, men were not released in less than 6 months. Any time after that period a man might be restored to military duties regardless of the length of the sentence pronounced by a general court-martial. Restored enlisted men were reassigned to military duty in a different unit from that in which they had earlier served. As already mentioned, 96 percent of restored prisoners proved to be satisfactory soldiers.

CHART 53

GENERAL PRISONERS IN REHABILITATION CENTERS



PRISONERS OF WAR

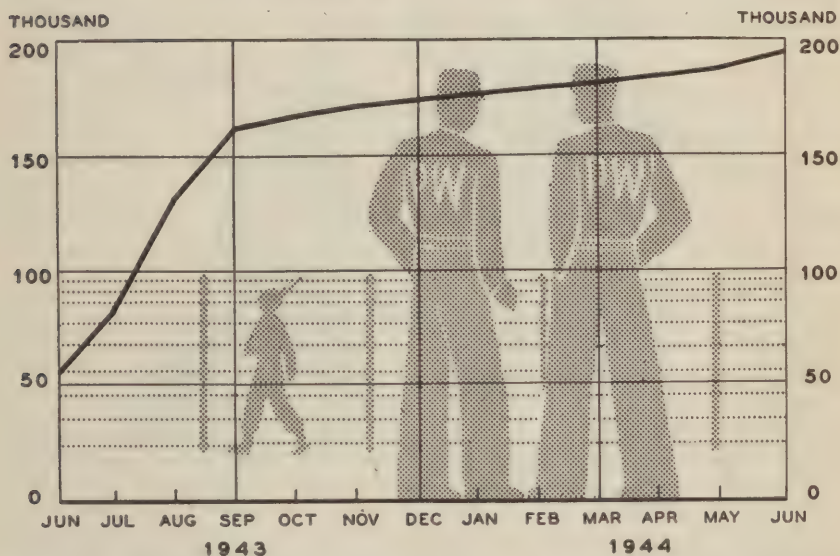
Within the space of the 1944 fiscal year the prisoner of war population in the United States almost quadrupled. From a total of 53,435 on 1 July 1943, the number grew to 196,948 by the end of the year. Of these, 146,101 were German, 50,278 were Italian and 569 were Japanese. Most of this increase, of course, resulted from the Allied victory in Tunisia. Preparations were being made at the end of the fiscal year to receive large numbers of prisoners captured in Italy and France.

Prisoners of war in the United States were held in 122 base camps and 126 branch camps, located in all but 7 States of the Union. With the exception of 33 camps established in isolated locations and 28 base camps located on Army posts, these prisoner of war camps were established by conversion of vacant troop housing.

On 1 July 1943, there were only 35 camps, located mainly in the South, Southwest, and Middle West, and accommodating from 1,000 to 2,600 prisoners of war each. In order to meet manpower shortages in various areas throughout the United States, additional camps ranging in capacity from 150 to 1,000 were located at military posts, and in agricultural areas. In the establishment of camps off military installations, existing facilities used by the CCC or NYA were employed, as well as State fair grounds and other similar facilities. Some quarters for work camps were provided by employers.

In September 1943, it was decided that defense considerations permitted certain modifications of previous restrictions upon the location and utilization of prisoners of war within the continental United

CHART 54
ENEMY PRISONERS OF WAR HELD
IN CAMPS IN THE U. S.



States. Accordingly, complete custody and utilization of prisoners of war was vested solely in the Commanding General of the Army Service Forces by a War Department memorandum. Under this memorandum prisoners of war were to be used wherever they were needed to perform essential labor in the continental United States. When prisoners were employed in the vicinity of vital installations or near international borders, additional protective measures were taken to guard them.

The Army Service Forces in 1944 placed increasing emphasis upon the employment of prisoners of war at essential labor. A definition of essential labor for the guidance of all service commands was laid down at the service command conference in Dallas, Tex., in February 1944. Essential work was defined as that work which would have to be performed whether prisoners of war were available or not.

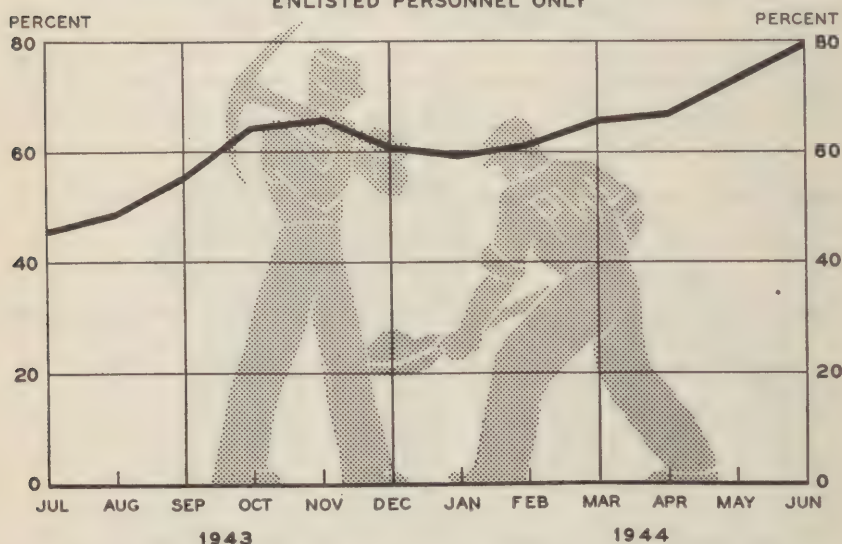
The employment of prisoners of war was governed by the Geneva Convention of 1929, which the United States Government has scrupulously observed. In January 1944, a Prisoner-of-War Employment Review Board was established to determine the type of work permissible under the convention. This convention prohibited the employment of prisoners of war in the manufacture or transportation of munitions or at other jobs "having direct relation with war operations." In prisoner of war stockades the prisoners helped in administration, management and maintenance, performing clerical work, repairing buildings and furnishings, constructing recreational facilities, and operating canteens and messes. Prisoners of war employed

CHART 55

UTILIZATION OF PRISONER-OF-WAR LABOR

PERCENT OF PRISONER-OF-WAR DAYS WORKED

ENLISTED PERSONNEL ONLY



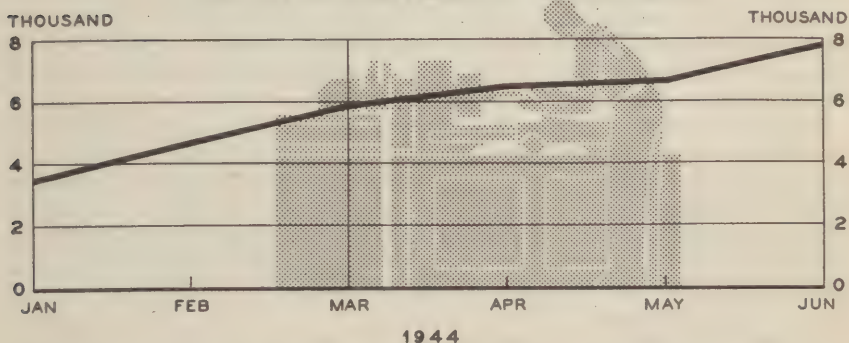
on Army posts contributed largely to the maintenance of roads, grounds, and railway rights of way; they helped operate laundries, bakeries, messes, warehouses, carpenter shops, motor repair shops, and clothing shops; they also cleared land and cut wood. Off Army posts prisoners of war were employed in planting, cultivating, and harvesting crops, in processing food and in lumbering, and in many other operations. At the end of the fiscal year 80 percent of all enlisted prisoners of war, excluding Italian Service Units, were working daily, and approximately 70 percent were employed in Army work, agriculture, and industry.

About 3,500 prisoners of war were moved into the sugarcane fields of the South in the autumn of 1943 to assist in the emergency harvest of the crops after a sudden freeze. More than 9,000 prisoners of war were employed in the lumbering and pulpwood industries. Larger numbers were employed in the short food-processing season. Pris-

oners of war were also used to pick cotton and harvest rice, peanuts, sugar beets, and other vegetables and fruits.

Because of the increased maintenance load facing the Army Service Forces in the United States during the year and because of the shortage of skilled mechanics, special emphasis was placed in the last quarter upon employment of prisoners of war in maintenance shops. The extent of the use of prisoners in combined and fourth echelon shops in the various service commands is shown in the accompanying chart. Service commanders also assisted Air Force and technical service installations in employing prisoners of war on essential work at military posts.

CHART 56
PRISONERS-OF-WAR EMPLOYED
IN 4TH ECHELON SHOPS



In accordance with the Geneva Convention officers were not compelled to work and were not employed unless they requested it; non-commissioned officers were used only in supervisory positions unless they volunteered for general work. Prisoners of war were not used on jobs for which they were physically unfit or on jobs which were unhealthful, dangerous, menial, or degrading. The length of the work day for prisoners of war was that customarily worked by civilian labor, but in no case were the prisoners kept away from camp more than 12 hours.

Employed prisoners of war were paid on a uniform basis of 80 cents a day. Payment was in canteen coupons. Any balance not taken in coupons was deposited in a trust fund. In March 1944, an incentive pay system was created to provide additional compensation for prisoners accomplishing more than an average amount of work. Under this plan prisoners were enabled to earn up to \$1.20 a day. Prisoners occupying supervisory positions were paid an amount equal to the average earnings of the men in the work detail under their supervision.

Special precautions were taken to insure that prisoners of war were employed by private contractors only when civilian labor was not available. Requests for the use of prisoners of war by private employers were made to the War Manpower Commission and the War Food Administration. The requests approved by these agencies were forwarded to the appropriate service commands with the certification that prisoners of war were needed by specific employers and that free

labor could not be recruited. The certifying agencies also indicated the priority of the request, the man-hours and man-days of work for which prisoners were needed, the place and type of work to be done, the prevailing wage rate for similar work in the locality, and the amount of work that could be completed in a day by inexperienced free workers. Contractors paid the prevailing wage; the difference between this and the prisoner's wage went to the United States Treasury.

In order to decrease the number of guards required, security precautions were reduced. Commanding officers at prisoner-of-war camps were expected to take reasonable precautions to prevent the escape of prisoners, but overguarding was discouraged. Beginning in November 1943, selected Italian prisoners of war were permitted to leave their camps for their place of work, perform their jobs, and return without any guard. The prisoners in this category signed a statement that they would obey all rules and regulations and would not make any attempt to escape. Employers reported to military authorities any instances of unsatisfactory conduct. This limited parole of Italian prisoners was supplanted by the organization of Italian Service Units.

Prisoner of War Circular No. 24, on 24 April 1944, stated that work details would be guarded by the minimum guard personnel required to provide reasonable security against escape and sabotage. During regular daylight hours selected prisoners of war might be employed without guards in areas in which military personnel were regularly on duty, provided that the prisoners were under a United States work supervisor and that frequent counts of prisoners and inspections of their work were made.

By 30 June 1944, 421 prisoners of war had escaped from camps in the United States. As of that date, all but 8 of these had been recaptured. Those uncaptured were men who had escaped during the last few days of the year. The fact that prisoners had no cash in their possession, normally did not speak the English language, and had no identification papers served to discourage efforts to escape. Up to the end of the year there were no reported efforts at sabotage by escaped prisoners of war.

Many prisoners of war were sick or injured when they arrived in the United States. All prisoners were provided medical care by the station hospital at the prisoner of war camp or post at which the prisoner camp was located. Certain general hospitals were designated in the various Service Commands for treatment of serious sickness or injuries. In general, the health of the prisoners of war held in the United States was excellent. The same standards of medical treatment were provided prisoners of war as were provided American soldiers. Mixed Medical Commissions examined prisoners to certify proper cases for repatriation. During the year, 473 sick and wounded German prisoners were repatriated to Germany from continental United States. Captured protected personnel of the enemy (medical, sanitary, and chaplain personnel) were classified and utilized to the greatest degree possible in administering to prisoners of their own nationality.

The problem of educational and recreational facilities for prisoners of war grew with the enlarged number of camps and increased numbers

of prisoners held in the United States. Prisoners were encouraged to organize their own recreational programs and were given opportunity to construct recreational facilities in camp compounds. All camp sites included space for athletic fields. Barracks space was made available for amateur theatricals and other performances. Musical instruments and other recreational equipment were purchased by the prisoners with their own funds through camp canteens or supplied by welfare agencies. Prisoners were also permitted to purchase American newspapers, books, and radios capable of receiving only American domestic broadcasts. During the course of the year arrangements were made for prisoners to see regular American motion picture releases. They were also permitted to take correspondence courses at their own expense. Army post exchanges provided supplies for prisoner of war canteens.

Prisoners of war were segregated in camps by nationality. Officers were housed and messed in compounds separate from those of enlisted men. Administrative measures and disciplinary proceedings were normally sufficient to correct unruly prisoners. Major infractions of discipline, however, were handled by court martial. During the course of the fiscal year there were 35 general or special courts-martial of prisoners of war held in the United States.

Representatives of the State Department and of the Legation of Switzerland inspected all prisoner of war base camps and many branch camps during the course of the year. As the Protecting Power, the Swiss Government reported to the German Government the conditions under which German prisoners were held in the United States. The International Red Cross Committee delegates were also active in aiding prisoners.

German and Italian Postal Units were established to give directory service to prisoner of war mail, and were operated by prisoners under American supervision.

At the end of the calendar year the Provost Marshal General called a series of five regional conferences throughout the United States at which officers of the Provost Marshal General's Office and those from Service Command Headquarters and Prisoner of War Camps met to discuss their respective policies, problems, and suggestions.

Italian Service Units

In January 1944 the Army Service Forces estimated that more than 90 percent of the nearly 50,000 Italian prisoners of war in the United States might be organized into Italian Service Units. Final approval for such a plan was given by the Secretary of War on 12 February 1944. A directive issued by the Army Service Forces on 13 March 1944 declared: "In order to utilize to the maximum the services of Italian prisoners of war who are loyal to the cause of the United Nations, they will be organized under Army tables of organization and equipment into service units without arms. These service units will be organized, trained, and utilized in the continental United States and in such overseas areas as may be directed."

Italian officers and enlisted men filled all authorized positions. The personnel assigned to service units remained prisoners of war but were released from stockades and placed in the custody of American officers attached to the units. Over-all command was vested in a Commanding

General, Italian Service Units. He was responsible for formulating basic policies and procedures governing the use of Italian Service Units and for preparing training programs. Actual training and use of Italian Service Units was handled by service commanders and chiefs of technical services.

Initially the pay and allowances prescribed for prisoners of war were also applicable to Italian Service Units. Personnel were not given leaves, furloughs, or passes but were given the liberty of the station as prescribed by the station commander. Enlisted men were provided with class B American uniforms. No prisoner of war device was worn but instead a green brassard bearing the word "Italy" in white and green letters was worn at all times, sewn on the left sleeve of the outer garment, and a circular cloth patch bearing the word "Italy" was sewn to the front of the garrison cap. Uniforms for officers were tailored by prisoner of war tailors from materials furnished by the Government. The only insignia of rank authorized was that to which the individual was entitled in the Italian Army.

Italian Service Units were not trained for use in combat and were not used in the handling of explosives at ports of embarkation.

Headquarters of Italian Service Units were opened at Fort Wadsworth, N. Y., on 17 March 1944. At the end of the fiscal year this headquarters consisted of 12 officers, 8 enlisted men, and 12 civilian employees. In addition, there were 55 Italian officers and about 50 Italian enlisted men. Some 27 of these officers were engaged in the translation of American Army regulations and training manuals. By June 1944, 34,000 enlisted men and about 3,000 officers had signed application for service in Italian Service Units. This amounted to 78 percent of the officers and 73 percent of all enlisted men held as prisoners of war. Of those not volunteering, a large number were excluded because of pro-Fascist inclinations. Some enlisted men could not see any advantage in the new status and were fearful that reprisals might be taken on their families at home.

All the officers volunteering for service could not be used, since the units called for 1 officer to 33 enlisted men. The ratio of Italian officers to enlisted men held as prisoners of war was 1 to 13. By the end of the year 187 units had been authorized and 181 actually organized. Of the 181 units, 136 were Quartermaster units, 28 were Engineer units, 16 were Ordnance, and 1 a harbor craft unit of the Transportation Corps. As soon as training was completed, 47 of these units were to be assigned to service command installations, 68 to ports of embarkation, 31 to Ordnance depots and arsenals, 19 to Quartermaster depots, and the remainder to other installations.

One American officer was assigned to each regimental battalion and company headquarters and six enlisted men were assigned to each company. American personnel commanded the units and were responsible for discipline and control. They prepared and certified pay rolls, appointed Italian personnel to enlisted grades and officer positions, supervised training, and kept necessary records. These duties were to be progressively taken over by Italian personnel.

Beginning 24 May 1944, passes were authorized for groups of Italians to visit churches, parks, and other places of interest outside Army posts when accompanied by American officers. Special equipment was purchased from company and other funds to provide recrea-

tional equipment for the units. Italian officers and enlisted men used post exchanges, chapels, post theaters, and other facilities under the supervision of American personnel. Friends and relatives were allowed to visit Italian prisoners of war on Army posts. In June 1944, it was decided to abolish domestic censorship of mail for members of Italian Service Units but to maintain censorship of mail sent or received from overseas.

The training program for Italian Service Units was designed to prepare them for organization work of high quality and considerable quantity. Initially the lack of training manuals and training aids translated into Italian handicapped the training program. Frequently, temporary translations had to be made at training centers until officially translated materials were made available. At the outset, about 60 percent of all personnel were trained at unit training centers where the men received on-the-job training at installations. This latter training consisted of assigned work at the installation in addition to basic military training. Instruction in the English language was given to all members of Italian Service Units, a minimum of 6 hours weekly in off-duty hours being required. Where applicable, English terms and phrases were stressed.

Equipment for Italian Service Units presented no great problem, since the units approximated regular United States Army organizations. While serviceable clothing of various types was issued to service units, every effort was made to maintain a uniform appearance. Definite allowances were made of individual equipment, including toilet articles and other personal items for which the enlisted man was responsible the same as American soldiers.

The original rates of pay were revised on 25 April 1944, to provide that enlisted men might receive \$24 a month, of which one-third was paid in cash; the remainder was issued in the form of post exchange coupons. Officers were paid at the rates of \$44 a month for lieutenants, \$54 a month for captains, and \$64 for majors and above.

All local commanders using Italian Service Units were unanimous in their opinion that these units were of major assistance in carrying out the operations for which they were responsible. In particular, commanding generals of ports of embarkation spoke in very high terms of the work done by Italian Service Units in loading and unloading freight cars and ships. In addition, the work of Italian Service Units in maintenance shops and in depots was of great importance in the prosecution of the war effort. At the end of the fiscal year a program for the release of information about the work of Italian Service Units was in preparation.

PRISONER OF WAR INFORMATION BUREAU

The Provost Marshal General in accordance with the terms of the Geneva Convention maintained in Washington, D. C., a central Prisoner of War Information Bureau. This bureau recorded all United States nationals in enemy hands, including members of the Army, Navy, Marine Corps, Coast Guard, and civilians. Information was received through the International Red Cross, the Protecting Power, and communications passing through the Office of Censorship. In addition, unofficial information about United States nationals in

enemy hands was obtained from radio broadcasts originating in enemy territory and monitored by the Foreign Broadcast Intelligence Service of the Federal Communications Commission. A record of enemy prisoners of war and interned civilians in United States custody was likewise kept and the reports required under the Convention were made to the International Red Cross and the Protecting Power.

As of the end of the fiscal year, the Prisoner of War Information Bureau had received through official channels the names of 24,029 United States prisoners of war in the hands of Germany, 19,994 in the hands of Japan, 2,777 United States civilians interned by Germany, and 7,025 United States civilians interned by Japan. In addition, the Bureau had received unofficial information regarding 2,618 American civilians interned by Japan.

When notified that a member of the United States Armed Forces was a prisoner of war, the Prisoner of War Information Bureau transmitted that information to The Adjutant General if the prisoner was a member of the Army, or to other appropriate offices if he was a member of the Navy, Marine Corps, or Coast Guard. The Adjutant General or Chief of Naval Personnel notified the next of kin. The Prisoner of War Information Bureau furnished further available information concerning the prisoner, including address, health, and transfers from camp to camp. The Bureau furnished parcel labels to the next of kin, and answered their inquiries about prisoners. It received through the Protecting Power, the International Red Cross, and other relief agencies, reports on conditions, location and population of enemy camps where American prisoners of war were detained and made that information available to the theater commanders and interested agencies.

An air mail letter form was developed during the year and made available at all post offices to expedite correspondence with United States prisoners of war and civilian internees at a special air-mail rate of 6 cents. A general information circular was sent to the American camp leader in each prisoner of war camp in Germany where United States prisoners of war were held to enable him to advise other prisoners on their pay and allowances, allotments, purchase of war bonds, family allowances, Government insurance, commercial insurance, taxes, benefits under Soldier's and Sailor's Relief Act, powers of attorney, transmission of legal documents, promotions, and the submission of letters of inquiry.

CIVIL AFFAIRS

During the fiscal year ending 30 June 1944, a total of 2,919 officers were trained at various training schools under the supervision of the Provost Marshal General for civil affairs duties in Allied occupied areas in the European and Pacific theaters of operation.

Early in 1943 it became apparent that the capacity of the School of Military Government at Charlottesville, Va., would be insufficient to fill the requirements of the various theaters of operation. Consequently, a supplementary civil affairs training program was developed at the Provost Marshal General's School, Fort Custer, Mich., and at civil affairs training schools established at 10 selected universities. After a training period of 1 month at Fort Custer, the students were

assigned to one of the civil affairs training schools for 2 or 3 months of language and area instruction. A total of 1,981 officers were trained during the year under this combined program—1,824 Army officers for the European theater, and 128 Army officers and 29 Naval officers for the Far East.

The class enrollment of the School of Military Government at Charlottesville was increased from 150 to 175 and the courses were shortened from 4 to 3 months. The capacity of the combined training program at Fort Custer and the Civil Affairs Training Schools was increased from 100 to 350 students per month.

Military government instruction in occupational and military government duties for company grade officers in the Corps of Military Police and for enlisted men was also offered at Fort Custer, Mich. When the need became acute, many of the enlisted graduates of this course were withdrawn from the Military Police units to which they had been returned after graduation and were assigned for service in occupied areas overseas. A total of 902 company officers completed the Occupational Police and Military Government course at Fort Custer and 1,953 officers completed the preliminary course at Fort Custer prior to attendance at Civil Affairs Training Schools.

Instruction at the School of Military Government included the fundamental principles and practices of military government, plus specific area training, the application of principles of military government to certain areas, and the study of certain foreign languages. Substantially the same subjects were taught at the other schools. The early courses at the civil affairs training schools emphasized language studies even more than the later ones, but the objective was always to attain a speaking knowledge of the colloquial language. Two other notable changes in emphasis occurred in all the schools. Area instruction was focused upon the particular field in which the officers were expected to operate, and the amount of military government instruction was increased, with particular attention to the experience of officers already operating with the Allied Military Government in Italy.

On 13 October 1943 the commissioning of civilians as officers in the Specialist Reserve Section of the Officers Reserve Corps for civil affairs duty was ended. After that time the Provost Marshal General selected all officers for civil affairs training from among those already on active duty. Selection of officers for European training and assignment was completed on 8 December 1943, and training for that area ended on 22 April 1944. Considerable numbers of officers were withdrawn from training for overseas shipment prior to the completion of the courses at Charlottesville and at the various civil affairs training schools because of urgent theater requisitions. Assignments were immediately available for all of the remaining officers who successfully completed the training program.

A civil affairs training program for the Far East was announced in April 1944. The first class of 250 students, consisting of approximately 190 Army officers and 60 Navy officers, opened at the School of Military Government on 12 June 1944. After 6 weeks of training devoted to the general principles of military government, and to particular problems which might arise in the Far East, student officers would be assigned to 6 months' courses at the civil affairs training schools established at six universities.

The "United States Army and Navy Manual of Military Government and Civil Affairs" (FM 27-5), which was completely revised and issued as a joint Army-Navy manual in December 1943, continued to be used as the standard basic text and guide for instruction.

Experience at the School of Military Government during 1942 pointed to the need for more information about the areas of potential occupation. Arrangements were made to obtain the desired information from experts in various government agencies, who assisted in preparing handbooks about foreign countries. Although the civil affairs handbooks were designed primarily for civil affairs officers, they were also used extensively by agencies cooperating in civil affairs activities, such as the United Nations Relief and Rehabilitation Administration, the State Department, the Foreign Economic Administration, the Army Industrial College, the United States Military Academy, and other official organizations.

The original program contemplated 17 handbooks. These were to cover the geographical and social background, Government and administration, legal affairs, Government finance, money and banking, natural resources, agriculture, industry and commerce, labor, public works and utilities, transportation systems, communications, public health and sanitation, public safety, education, public welfare, and cultural institutions of each Axis or Axis-occupied country. By 30 June 1944 the project had been completed for Italy, Greece, and France, and several other countries were partially covered. Altogether, 139 handbooks were completed, and about one-quarter of a million copies reproduced and distributed, principally overseas.

INTERNAL SECURITY

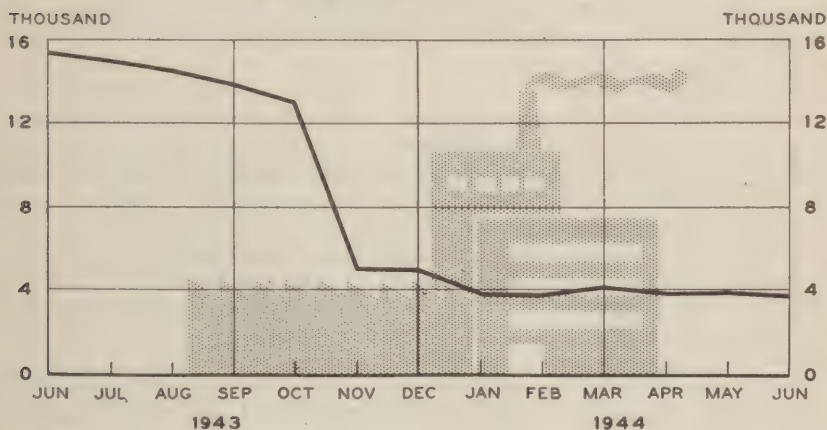
Under War Department policy, the primary responsibility for internal security rested upon the owners and operators of private facilities, local commanding officers of War Department installations, and local and State governments. The War Department through inspections determined the adequacy of protective and preventive measures at facilities and installations vital to the war effort. These measures guarded against the continuing hazards of fire, explosion, accident, air raid, espionage, sabotage, and unauthorized entry. The War Department was also prepared to provide protection, including troops, in emergency situations, such as civil disorders, natural or war disasters, and extensive sabotage.

By August 1943, it was evident that the transition from the defensive to the offensive stage of the war warranted relaxation of many safeguards taken in the early days of the war. Manpower shortages also made this desirable. In September 1943, a joint Army-Navy three-man committee on internal security was created to review the situation. In the same month, it was decided to reduce the Master Responsibility List of vital facilities and installations receiving security inspections.

On 3 November 1943, the Under Secretary of War and the Assistant Secretary of the Navy signed Joint War and Navy Departments Circular No. 1 on internal security. This circular pointed out that most facilities of vital importance to Army and Navy procurement had by that time achieved a satisfactory security status and that "the pres-

ent crucial stage of the war requires the directing of all available resources in manpower into an increased effort in direct support of the present offensive phase of the war." Under a policy of carefully "calculated risks," guard and other security personnel were to be sharply reduced. Security inspections of privately operated facilities by the War Department were henceforth to be limited to those on the Master Inspection Responsibility List. This list was divided into four categories: (a) P-1 facilities, consisting of the approximately 2,000 most important facilities, the damage or destruction of which would have a substantially adverse effect on the prosecution of the war; (b) P-2 facilities, consisting of the approximately 3,000 facilities next in importance; (c) PX facilities, of somewhat lesser importance, handling explosives, irritant or incendiary products; and (d) PS facilities, engaged in confidential or secret work or producing easily sabotaged products, where the risk of sabotage or espionage was great. These last two categories received personnel security inspections only.

CHART 57
FACILITIES ON MASTER INSPECTION
RESPONSIBILITY LIST



After the promulgation of Joint Circular No. 1, the Provost Marshal General revised the Master Inspection Responsibility List down from some 10,000 facilities to slightly less than 5,000. Further reductions were planned. The agency to make the actual inspection, either Army or Navy, was determined by the Provost Marshal General.

On 12 November 1943, the Army Service Forces issued instructions that internal security inspections of War Department-operated field installations would be held to a minimum and would follow the same policies as for private facilities. Commanding generals of service commands and chiefs of technical services were directed to effect maximum reductions in security measures and in security personnel. On 20 December 1943, security inspection responsibilities for Army Service Forces installations were assigned to appropriate service commanders and chiefs of technical services.

On 18 April 1944, Executive Order 9437 transferred internal security responsibilities from the Office of Civilian Defense to the War Department. Under this authority, the Provost Marshal General made agreements with the Petroleum Administration for War for the inspection of specific oil refineries, pipe lines, and terminals; with the Federal Power Commission for the inspection of all important power systems and gas utilities; with the Public Roads Administration for the inspection of all important highway bridges, and with the Bureau of Mines for the inspection of all important mines and related facilities. The Provost Marshal General also assisted the Office of Civilian Defense in establishing the States War Inspection Service, a volunteer inspection service in which insurance inspectors, under the supervision of State insurance commissioners or fire marshals, inspected important war plants which were not included in the security inspection programs of the War or Navy Department.

At the end of the fiscal year a tabulation was completed showing the security personnel and monetary savings effected by the Army Service Forces in reducing internal security measures at privately operated facilities. As of 3 May 1944, total personnel savings for the Army Service Forces numbered approximately 24,196, amounting to annual dollar savings of \$52,700,000. Nearly 11,000 persons were freed for other activities by reducing security measures at facilities retained on the Master Inspection Responsibility List. The remaining 13,000 persons were serving at facilities deleted from the list.

Safety Program

In 1942 the Army Service Forces initiated an accident-prevention program at all important facilities and installations having industrial operations. Accident frequency data were reported also by private facilities receiving security inspections by Army Service Forces agencies. During 1943 the number of accidents declined steadily. This decline was most noticeable at installations reporting to service commands and ports of embarkation and at facilities reporting to the Chemical Warfare Service. The accident frequency rates for civilian employees in all Army Service Forces installations compared favorably with those reported by privately operated plants.

The system of reporting accidents was simplified greatly by a revised procedure contained in ASF Circular 118, 28 April 1944. Reports were no longer required from privately operated facilities on the Master Inspection Responsibility List except those explosive, irritant, and incendiary facilities assigned to the Ordnance Department and Chemical Warfare Service. Internal security inspectors examined the accident records of plants at the time of inspection and called to the attention of the management any unfavorable trends noted.

Personnel Security Programs

During the fiscal year 1944 a personnel security inspection program was established under the provisions of Joint Army-Navy Circular No. 1. Facilities listed in the Master Inspection Responsibility List were inspected in order to determine the adequacy of their personnel security measures. Under the doctrine of calculated risk, the adequacy of personnel security measures in plants not included in the Master Inspection Responsibility List was not subject to inspection.

Service command inspection personnel was greatly reduced by the abandonment of the continuing protection theory.

As part of the same policy the number of loyalty investigations of civilians was reduced during the year by some 60 percent. The use of commercial investigative concerns was discontinued in March 1944. Investigations by the Army Service Forces were confined to civilians suspected of disloyalty, having questionable backgrounds, or occupying positions affording unusual opportunities for sabotage or espionage.

The administration of the program under which the consent of the Secretary of War was granted for the employment of aliens upon classified or aeronautical War Department contracts was decentralized in 1944 to the service commands and the Commanding General, Army Air Forces Matériel Command. In consequence, the approval of aliens for the positions covered by the program was materially expedited. To facilitate the decentralized operations, all administrative instructions and procedures were codified in a single directive to the interested agencies. The files of aliens previously denied such consent were reviewed and administrative reversals made in several hundred cases where changed circumstances warranted a different decision. Approximately 54,700 aliens were approved for employment under this program while some 1,200 were disapproved.

Chief emphasis in 1944 was given to the suspension of suspected subversives from employment in facilities of importance to the war effort. The principles governing this program were also codified in one directive and the grounds for suspension enumerated in the interest of uniformity of action. During the year there were some 1,080 suspensions. After July 1943, employees suspended from employment in facilities of importance to the war effort were reimbursed if their suspension, upon review, was found to have been without sufficient cause. A reimbursement fund was made available and procedures were worked out in conjunction with the Office of the Judge Advocate General for the processing of reimbursement claims.

The Industrial Employment Review Board, during the fiscal year, considered 373 alien appeals, granting consent in 178 cases and denying consent in 195 cases. The Board also reviewed 1,263 subversive appeals, affirming the original decision in 999 cases and reversing the decision in 264 cases.

Persons of Japanese ancestry applying for employment in facilities important to the war effort and in Army posts, camps, and stations were also cleared by the Provost Marshal General. Similarly, procedures were established under which the Provost Marshal General approved applications by persons of Japanese ancestry for enlistment in the WAC, for airman identification cards, and for return to Hawaii and other restricted areas. In the performance of these responsibilities, approximately 5,000 cases were received and acted upon during the year.

The War Department Fingerprinting program, under which employees engaged in war work were fingerprinted and checked against the criminal records of the F. B. I., was discontinued in November 1943. Approximately 26,000,000 war workers had been fingerprinted under this program. Fingerprinting of civilian employees of the War Department, however, was continued.

The investigative activities of the Counter-Intelligence Corps in the service commands and of the sergeant investigators personnel security program were consolidated in January 1944. A consolidated investigative organization known as the Security Intelligence Corps was established within the service commands. The consolidation resulted in a substantial reduction in personnel engaged in investigative duties. Incident to the consolidation, the Counter-Intelligence Corps School in Chicago was reactivated under the supervision of the Provost Marshal General as a class IV installation, and its name changed to the "Security Intelligence School." The curriculum of the school included a course in conducting personnel security inspections, in addition to a comprehensive course in counter-intelligence investigations. The Provost Marshal General consolidated and prepared monthly summaries and analyzed and prepared for publication civilian employee accident statistics.

Pursuant to a War Department Memorandum issued on 8 February 1944, a special board was organized in the Office of the Under Secretary of War to survey further all safety activities of the War Department. With the approval of that board, ASF Circular 123, issued on 2 May 1944, extended the accident prevention program to include military personnel of the Army Service Forces and prisoners of war and outlined the safety responsibilities of the Provost Marshal General, the Surgeon General, Director of Personnel, Director of Military Training Division, chiefs of technical services and service commanders.

Miscellaneous services

In January 1944 certain functions were assigned to the Provost Marshal General which, prior to that time, had not received staff supervision by any specific agency of the War Department. These included the preparation of policies and direction of (1) the apprehension of absentees, escaped military prisoners and deserters, (2) the investigation of crime within the military establishments, (3) the adequacy of guards at ASF installation, and (4) the guarding of military prisoners within the continental United States.

In March 1944 the commanding generals of all service commands and the Military District of Washington were directed to take more vigorous action to reduce AWOL rates. Existing procedures covering the apprehension of absentees were to be revised, if necessary, to make this activity more effective, and commanders were to make full use of the assistance of local civilian police agencies.

In June 1944, War Department policy governing the return of United States Army absentees or deserters discovered or apprehended in Mexico was revised. The previous agreement between the War Department and the State Department that absentees from United States military service would not be sought out in Mexico gave these absentees an almost certain immunity from apprehension. Under the revised procedure, in time of war, when an absentee from the United States military service, whose place of duty was outside Mexico, was discovered in Mexico, action necessary to obtain his return to military control was requested through military channels. The return of an absentee was not sought while Mexican authorities asserted a claim to his custody in order that he might serve in the armed forces of Mexico, or be tried for a crime under its laws.

The policy and procedure for the return to military control of United States Army absentees discovered in Canada was substantially the same as that for Mexico and had been in effect for some time. A procedure was established to provide for the return to Canadian military control of Canadian absentees apprehended or discovered in the United States.

During the 5-month period February through June 1944 a reported total of 9,516 criminal investigation cases were handled in continental United States, of which 91 percent were completed as of 30 June. The total value of stolen Government property recovered as a result of criminal investigation in the Army within the continental United States for the first 6 months of 1944 amounted to \$1,003,016.

The Provost Marshal General directed the investigation of numerous criminal cases in overseas theaters, in addition to those within the continental United States, and established liaison with the Bureau of Narcotics of the Treasury Department in an effort to stop illicit traffic in drugs by Army personnel.

Under the calculated risk policy, commanding officers of ASF installations were provided a list of suggestions on how to effect greater economy in the use of guard personnel. These suggestions helped bring about a reduction of 13,696 guards at ASF installations, of which 4,821 were civilian and 8,875 were military personnel.

A study of instances of escapes of military prisoners published late in 1943 indicated that many escapes were attributable to excessive fatigue on the part of guards. To correct this condition, a list was published of 132 installations, civilian and military, in the United States where military prisoners, other than prisoners of war, en route under guard might be confined overnight, while guards obtained a needed rest.

ARMY POSTAL SERVICE

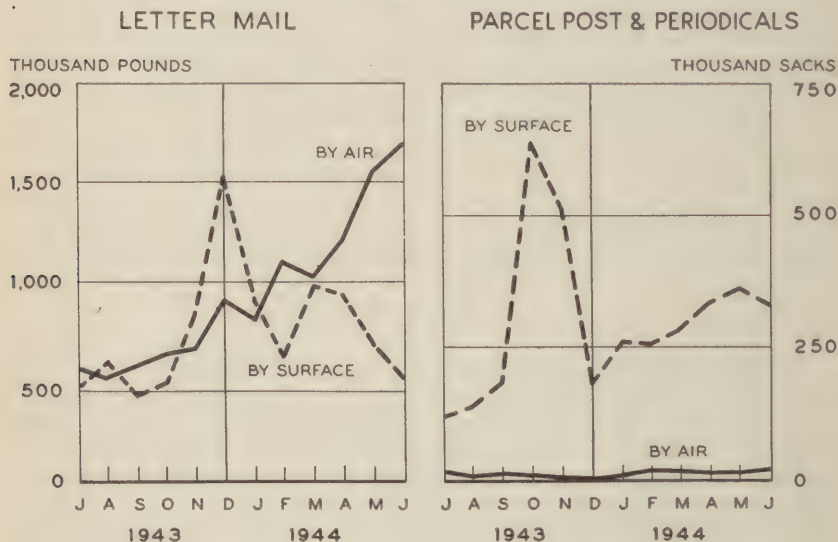
Mail dispatched overseas and V-mail received from overseas during the fiscal year 1944 expanded considerably. V-mail received in June 1944 was three times the amount received in July 1943, while V-mail dispatched was twice as large. The first-class mail volume, out-bound, doubled during the year. Figures on mail received from abroad, other than V-mail, were not available, since this mail was received by the civil postal authorities direct upon its arrival in the United States.

The steadily increasing volume of mail created a critical condition on both seaboard in obtaining space to "work" the mails destined for overseas troops. Efforts to find suitable space were unsuccessful. Arrangements were therefore made to build suitable facilities, and work was started in May at Long Island City, N. Y., and Oakland, Calif. These buildings are expected to be ready for occupancy about September 1944. They would provide the required space to handle the tremendous volume of Christmas parcels expected during the 2 following months. Also they would solve the space problem for the increase in overseas mails expected during the rest of the war.

The volume of mail to be transported overseas by air was a troublesome question in 1944. Space for mail on airplanes was provided on a per plane allotment basis. As a result, the overseas theaters did not know in advance the total amount to expect. Moreover, as the overseas population increased the volume of mail shipped by air did

not necessarily increase in proportion. There were complaints from overseas commands and constant pressure for increased air allotments for mail. Accordingly, a new system was established in June 1944 under which a minimum monthly allotment was fixed for each theater based on the plane space each had had for mail during the preceding few months. Each theater was informed of this basic minimum allotment. In addition, each was advised monthly of the total air cargo space in prospect for it during the ensuing month for all purposes, and was given an opportunity to fix the amount of this total it wished devoted to mail over and above the basic allotment. Thus, in effect, the theaters determined their own mail allotments on planes, except for the minimum fixed figure. As a result, complaints declined and air allotments for mail increased with a decided improvement in service.

CHART 58
MAIL DISPATCHED OVERSEAS



Continuing effort was made by the Army Postal Service during the year to speed up the transmission of mail. The progress made was illustrated by time checks made in August 1943 and May 1944. In August V-mail test letters took 8 days to reach Anchorage, Alaska; in May 3.9 days were required; it took 15 days to reach Algiers in August, and 7.1 days in May; the average time to reach Brisbane was cut from 12.7 to 9.8 days; for Cairo from 10 days to 6.7 days; for London 9.1 days to 8.1 days; for Naples 18.9 days in January and 11.1 days in May.

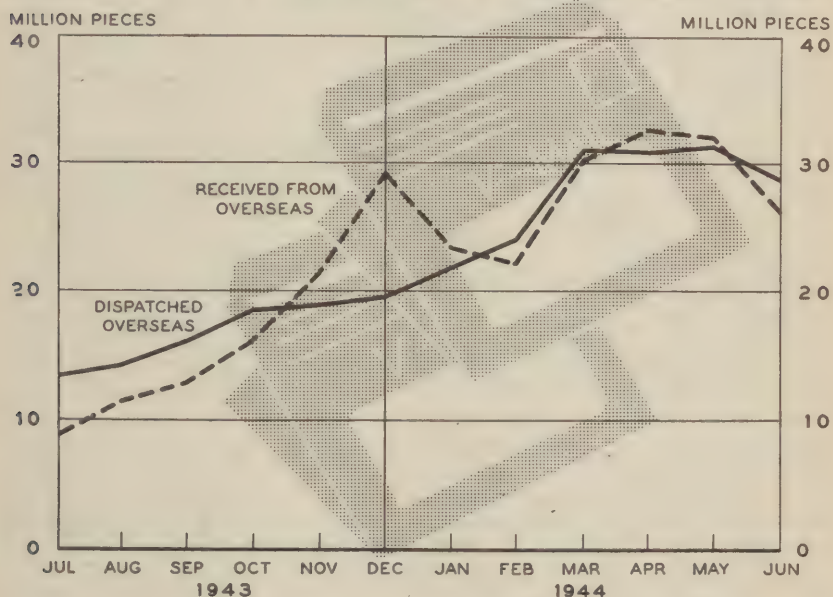
The mailing of 1943 Christmas parcels overseas was limited to the period 15 September to 15 October, the usual request from the addressee for the articles inclosed being waived in that period. The normal limitations of 5 pounds in weight, 15 inches in length, and 36 inches in length and girth combined, prevailed. The Army Postal

Service dispatched 1,205,616 sacks of Christmas parcels to oversea troops, of which 1,110,554, or 92 percent, were delivered on or before Christmas Day. The same provisions for the period of mailing and limitation of size and weight will apply for 1944. Plans were based on an estimated volume of 2,500,000 sacks. Because of improvement in transportation and other facilities, it was anticipated that better results would be obtained this time, despite an expected doubling of the volume.

Throughout the year a continuing and intensive program of public relations was conducted for the Army Postal Service. Since Army mail operations intimately touched all Army personnel and large segments of the public as well, this program became one of the most important of Army public relations undertakings. Full use was

CHART 59

VOLUME OF V-MAIL DURING FISCAL YEAR 1944



made of newspapers, magazines, radio, and affiliated outlets to inform the public on the manner and method of handling Army mails, the reasons for unavoidable delays, together with several campaigns to bring about greater public cooperation in the difficult problem of supplying good mail service to American troops throughout the world.

In July 1943 The Adjutant General conducted an intensive V-mail drive in conjunction with the Office of War Information, the Post Office Department, and the War Advertising Council. The following month saw a sharp increase in V-mail. Starting in mid-August and continuing through 15 October, an intensive Nation-wide campaign on the subject of overseas Christmas mails stressed such matters as mailing dates, correct addressing, proper packing, and the types of articles to be mailed.

In February 1944 another intensive V-mail campaign was conducted on a Nation-wide basis and once again there was a sharp upswing in V-mail use in the period immediately following. One of the highlights of the campaign was a 2-reel 20-minute motion picture entitled "Mail Call." This film was produced by the Pathe Pictures, Inc., under the supervision of the War Activities Committee of the Motion Picture Industry. It was shown in practically every motion-picture house in the country.

PERSONNEL RECORDS

The Adjutant General continued to maintain the central personnel records of the War Department for both officers and enlisted men. Reporting from overseas and from all units within the United States indicated total strength of the Army from time to time. In addition, many special reports were received on casualties, decorations and awards, and special types of separations.

During 1944, 11 different recurring reports were prepared on casualties. Three of these were weekly, 1 was daily, 1 was quarterly, and 6 were monthly. Battle casualty information included deaths, wounds, missing in action, and captured for all types of personnel by theater. In addition to the regular reports, 49 special reports were prepared showing casualties by branch of service. Some 17 different types of reports were prepared monthly on enlisted men in the Army and another 17 reports on officers. In addition, during 1944, 155 special reports on enlisted strength were run from machine records and another 128 special reports about officers. For the strength of the Army as a whole 35 reports about strength in the United States were made, 26 of which were monthly and 6 semi-monthly. Twenty-five foreign reports were prepared of which 24 were monthly. Eighteen world-wide reports showing both strength overseas and in the United States were prepared by The Adjutant General, 14 of them monthly. All this reporting was necessary in order to give the War Department General Staff and other offices full information upon which to base the personnel policies of the Army.

After 1 September 1943 all records of the newly created Women's Army Corps were merged with the regular records for enlisted and officer personnel. In this way one complete file was maintained, for example, of enlisted personnel of all components of the Army. The separate services were identified by distinctive colored jackets.

Demobilized Records

The records of all personnel discharged from the Army or lost in action were centrally held by The Adjutant General in a Demobilized Personnel Records Branch. Arrangements were made during the year for the immediate dispatch of all clinic records of closed hospitals to this branch. These records formerly were boxed and stored with other records when a hospital was inactivated. This practice obstructed the transmission of speedy information to the Veterans' Administration about former soldiers. In order to insure that all clinic records of an individual were available in one space, plans were also made to have all noncurrent clinic records maintained in one place by The Adjutant General.

The Adjutant General also maintained personnel records of separated civilian employees of the War Department. During 1944 more than 12 million records of civilians and enlisted men were received, filed, or consolidated. Correspondence cases about these records numbered more than 830,000 and 240,000 records were loaned to various parts of the War Department for information.

Casualty Records

A principal concern of the Army Service Forces in 1944 was to handle promptly all casualty information received from overseas. This operation depended in large part on adequate and well-trained personnel. By the end of the year the authorized number of civilian employees to handle casualty data had been obtained. In addition, numerous time- and labor-saving devices were introduced including bookkeeping machines, electric clock stamps, pneumatic tubes connecting telegraph dispatch desks to the Signal Center, dictaphones and typewriters which wrote constant information automatically. Full use was made of IBM machines and multilith printing presses operated by other parts of The Adjutant General's Office. Current procedures were constantly reviewed and new procedures installed as needed. Machine record punched cards were substituted for cable and radio reports from overseas wherever possible. This speeded up emergency casualty notifications which had to be sent to numerous individuals and agencies. By the end of the year the Casualty Branch in The Adjutant General's Office was occupying 88,000 square feet of space and included 57 officers and 2,144 civilians. Constant training programs impressed upon all employees the vital necessity of checking all reports carefully and insuring that accurate data were transmitted to next-of-kin. In general, all casualty information as received from overseas was transmitted within 24 hours; additional information subsequently received was likewise dispatched promptly.

DISPOSAL OF RECORDS

The Adjutant General's Office was also the central depository of the War Department for all noncurrent records. These were either held temporarily by the War Department, transferred to The National Archives, or destroyed. The responsibility for identification of noncurrent records rested with operating officials throughout the War Department. When these records were reported to The Adjutant General's Office, steps were taken to arrange for their prompt disposition. During the year nearly 43,000 file drawers of records were transferred by the War Department to the National Archives and another 106,000 file drawers of records destroyed as useless. The value of salvaged equipment and paper resulting from the disposition of useless records amounted to nearly \$700,000.

The most extensive efforts to retire noncurrent records were made during the year within the Army Service Forces itself. In September 1943 The Adjutant General was made responsible for scheduling the disposition of all noncurrent records held within the Army Service Forces. By the end of the year more than 9,000 file series in approximately 300,000 file drawers accumulated by ASF offices in

Washington had been surveyed. Some 51 percent of this material was scheduled for periodic disposition. Much of the material could be disposed of only upon approval of The National Archives, the General Accounting Office, and Congress. About 55 percent of all recommendations submitted to these agencies had been cleared and returned to The Adjutant General by 30 June 1944.

By the end of the year the preparation of comprehensive disposal schedules for all ASF headquarters offices was 70 percent complete. As soon as schedules were agreed upon, administrative officers in each office began to make appropriate disposition of noncurrent records. When all schedules were completed, additional check was to be made to insure that the schedules were adequate and that records were being disposed of as directed.

As a central depository for noncurrent records of permanent value, The Adjutant General in July 1943 established the War Department Records Branch. This action centralized control of the noncurrent records of all War Department offices in Washington for the first time in the history of the Department. Previously, The Adjutant General had held central personnel records and the records of Army units. This branch during the year received some 83,000 file drawers of records from the War Department, from the Army Air Forces, and from the ASF. Thirty percent of these file drawers were evaluated as useless papers and salvaged. One group of records was reduced from 1,000 file cabinets to less than 600 by microfilming index sheets. By the end of the year nearly 2,000 drawers of records with permanent value were being microfilmed.

In April 1944 the records scheduling program of the Army Service Forces was extended to the field installations of technical services and of staff divisions. It was estimated that these field installations were holding some 600,000 file drawers of records on war contracts and at least half as many drawers of other types of administrative records. The problem of establishing a disposition program for procurement records was complicated by the passage of Public Law 395, Seventy-eighth Congress, which provided stringent penalties for the unauthorized destruction of records by a private contractor. By inference this provision would seem to apply to similar records of the War Department. Concerted effort was under way at the end of the year to endeavor to reduce the volume of procurement records. The Army Air Forces was planning a similar effort.

In February 1944, three records survey teams were sent to each service command in order to reduce the quantity of noncurrent records accumulated prior to 1939. By the end of the year these teams had completed surveys at 6 service command headquarters and 39 posts. Altogether they had disposed of 19,400 file drawers of records, of which 13,720 were salvaged. More than half of the remainder were earmarked for disposal upon approval of Congress.

An Organization Records Branch was set up at the ASF Depot in Savannah in April 1944 to receive and administer the records of all troop units that were disbanded or which proceeded overseas. Plans were made to receive within the first year more than 100 freight carloads of records already stored at posts throughout the United States.

A War Department pamphlet on disposition of records was published during the year as a ready reference compilation of records authorized for disposal. Other compilations of records authorized for salvage were prepared for publication.

Plans for establishing a systematic records program were instituted during the year in several overseas theaters of operations. An Inactive Records Branch was established at headquarters of the European Theater of Operations under supervision of an officer from The Adjutant General's Office. The program prepared for this theater was presented to all overseas commanders by the end of the year. Two other commands indicated their desire to inaugurate a similar program. The purpose of this effort was to relieve troop units of the physical burden of maintaining records and to provide a systematic method for reducing the bulk before return to the United States.

PUBLICATIONS

During the fiscal year 1944 The Adjutant General arranged general publication of 651 new War Department manuals and the reprinting of 693 others. The total number of pages of printing involved was nearly 7 billion. In addition, some 1,885 tables of organization and equipment, some 1,400 Army regulations, 781 circulars, and 769 blank forms were printed by the Government Printing Office and distributed by The Adjutant General. These publications accounted for another 5½ billion pages of printed matter during the year.

All training literature during the year was standardized into 12 sizes. Indexes were added to manuals and periodic guides to all publications published. New processing procedures were worked out with the Government Printing Office under which all types of printed matter were put on a time-table basis. Administrative orders were delivered to distribution depots within 5 to 11 days. Production periods on new and reprinted manuals were reduced on an average from 4 to 2 months.

During the year procedures were developed to serve overseas theaters with publications and blank forms. Distribution officers were sent to the three major theaters to assist in organizing improved distribution services.

A periodic review of stockages in AGO depots operated by service commands was begun during the year to determine stocks of obsolete and excess publications and blank forms. A daily bulletin was begun providing instructions of the salvaging of these excesses. In addition, a salvage procedure was developed during the year for classified publications which formerly had been burned. Plans were under way at the end of the year to place all depot distribution of publications on a stock record basis. Salvage operations from April to June 1944 eliminated more than 90 carloads of surplus publications from depots in the United States.

Chapter 15. FISCAL SERVICES

The major fiscal functions of the Army Service Forces might be divided into three categories: Financial services to the personnel of the military establishment, financial services to industry, and general administrative operations. Financial services to the personnel of the military establishment covered pay (including casualty pay) of military and civilian personnel and the administration of personal finances of the soldier and his dependents, such as the payment of family allowances; the payment of allotments for dependents, Government life insurance, and war bonds; receiving and accounting for soldiers' deposits; providing facilities for personal transfers of funds from overseas; and arranging for the establishment of banking facilities.

Financial services to industry included the payment of commercial and transportation bills and the furnishing of aids to production, such as advance payments, guaranteed loans, and administration of the War Department contract insurance program. General administrative operations included provision of an adequate receipts and disbursements service; planning and promulgation of accounting and auditing procedures; and liaison activity with the General Accounting Office and the Treasury Department. Within the continental limits of the United States, fiscal services were administered by the fiscal directors of service commands; finance officers, United States Army; local fiscal and disbursing officers; fiscal officers of technical services; and budget and fiscal officers, and finance officers of the Army Air Forces. In overseas areas fiscal services were provided under the direction of theater commanders through theater fiscal establishments, including disbursing officers. All this activity was guided by the Fiscal Director, ASF, who also directly performed some services.

During 1944 studies were conducted on the proper means by which both staff guidance and operations could be carried out in the most economical and efficient manner. It was found that the normal disbursing, accounting, and auditing services could best be performed through established command channels, while many special services requiring a repetitive and uniform operation could best be performed under centralized control.

Staff direction of fiscal services were furnished through technical manuals, revisions of regulations and procedures, meetings, inspections, correspondence, and training. These various media facilitated the operation of fiscal services and at the same time standardized such operations so that the results were subject to uniform interpretation and summarization. Centralization of payment of family allowances and dependency allotments, and of the payment of Government life insurance premiums to the Veterans Administration, on

the other hand, meant greater operating efficiency. Payments were made more promptly, and consolidated accounting, reporting, and operating data were readily available. At the end of the fiscal year the Office of Special Settlement Accounts was established to handle the records, payments, and settlements for accounts of deceased Army personnel and of those missing in action or captured. The new office included centralized records of Government life insurance allotments and of soldiers' deposits. All fiscal activities affecting beneficiaries of casualties were thus merged.

Every activity of the Army wherever conducted had its fiscal aspects. The Allied offensive proceeding at a constantly increasing pace in all parts of the world produced fiscal management responsibilities of unprecedented scope. These responsibilities included participation in the fiscal and currency planning incident to invasion operations and occupation. Plans were prepared as desired by the Civil Affairs Division and the Budget Officer of the War Department. The Army Service Forces was specifically charged so far as the United States was concerned with the responsibility of shipping special currencies to theater destinations, and of maintaining records of shipments and deliveries.

For the fiscal year 1944 Congress made 75 billion dollars available to the War Department. This brought total appropriations, including transfers and reimbursements, since 1 July 1940 to 200 billion dollars. Payments by Army disbursing officers during the fiscal year 1944 amounted to 52 billion dollars an average of over 4 billion dollars per month. A large part of this expenditure was in liquidation of obligations incurred during prior fiscal years on which deliveries were made in 1944. In making all payments, over 100 million checks were issued, half of which covered commercial invoices, pay and travel accounts, and civilian pay rolls; the balance covered mainly family allowance and voluntary allotment payments. All enlisted men were paid in cash. Net new obligations incurred during the fiscal year 1944 were nearly 43 billion dollars.

The Army Service Forces kept the central records for all appropriations, obligations, expenditures, and unobligated and unexpended balances. More than 25 million vouchers were accounted for under 213 appropriation titles and 1,022 project accounts during 1944.

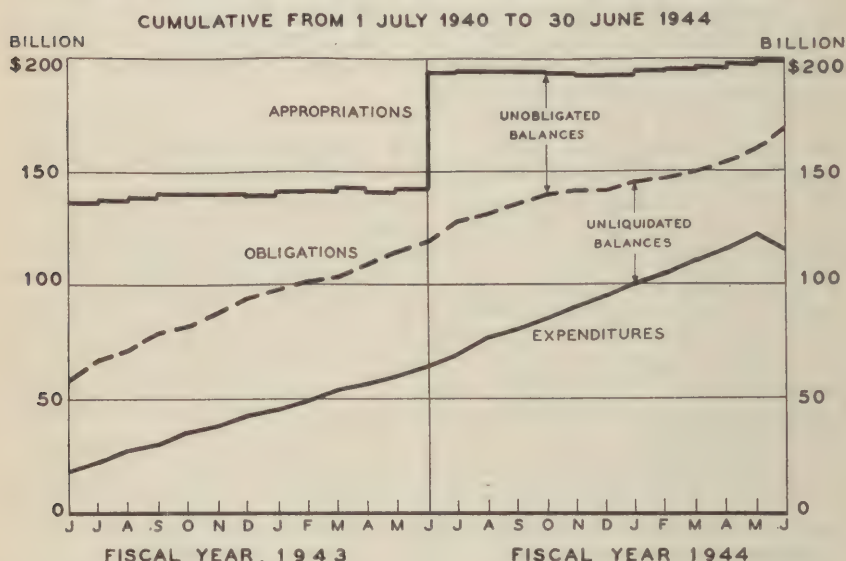
The accelerated tempo of war activities caused a proportionate increase in fiscal activities and produced special problems in many fields. Although the amount expended for pay of the Army increased approximately 25 percent from November 1943 to May 1944, 99.9 percent of the regular military pay rolls in the continental United States were paid on time. The number of military organizations paid in the United States declined from 47,000 per month at the beginning of the fiscal year to 30,000 at the end. This reduction was offset by payments to increased numbers of organizations overseas under more difficult circumstances.

Additional functions assigned to disbursing officers in 1944 included payment in the field of initial family allowances for all new inductees, as well as payment of numerous claims for arrearages of pay due discharged personnel. Mustering-out pay had to be sent to over a million soldiers honorably discharged since Pearl Harbor. Within 2 days after the mustering-out pay legislation was signed by the President,

payments were started. With the technical and legal problems solved, claims were filed properly and paid promptly.

Streamlined procedures were established on 1 January, 1943, for paying the 1,300,000 civilian employees of the War Department. Rapid turn-over of employees, untrained supervisory and clerical personnel, and increased difficulties occasioned by tax withholding, War-bond deductions, and varying overtime and night premium payments had to be met and solved in the fiscal year. Payment records indicated that 99.96 percent of the civilian pay rolls in the United States were paid on time. At the beginning of the year trained advisors were placed in the field to assist civilian pay-roll certifying officers. Training courses were also set up.

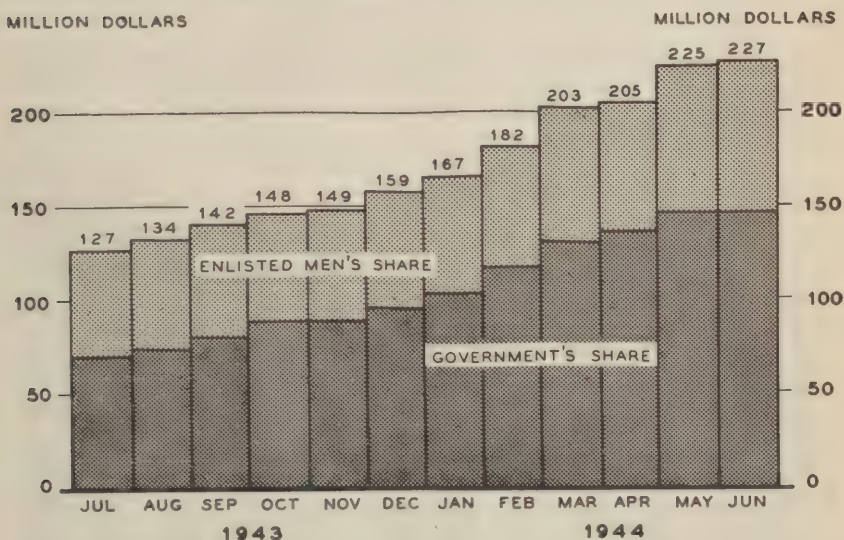
CHART 60 SUMMARY OF STATUS OF MILITARY FUNDS



New procedures enabled the average civilian pay-roll supervisor to handle the pay-roll records of 161 employees as compared with 116 employees under former procedures. An agreement was reached with the Comptroller General whereby the individual earnings records containing auditable information were considered administrative records of the War Department and were sent to the four regional offices where they were audited by the General Accounting Office. These records were cut off on 31 December 1943, and by 30 June 1944 their audit was well under way. The audit was expected to be completed by 31 December 1944. Experience at the end of the fiscal year, while not conclusive, indicated that 50 percent of the exceptions which were raised could be cleared informally. Further savings would result from advice to installations to avoid recurrence of errors which came to light through the audit.

During the month of June 1944, 3,800,000 family allowance checks were issued, amounting to 227 million dollars, of which the Government contributed 148 million dollars and the soldiers 79 million dollars. The passage of the Amended Servicemen's Dependents Allowance Act, effective 1 November 1943 required the conversion by March 1944 of 1.6 million family allowance cases to new rates. The task involved changing the records of one-half million cases affecting wives and children. In the remaining 1.1 million cases of other than wives and children, it required the submission by beneficiaries of certificates showing dependency to the extent of substantial or chief support, adjudication thereof, and adjustment in records. The job was completed on time.

CHART 61
FAMILY ALLOWANCES PAID



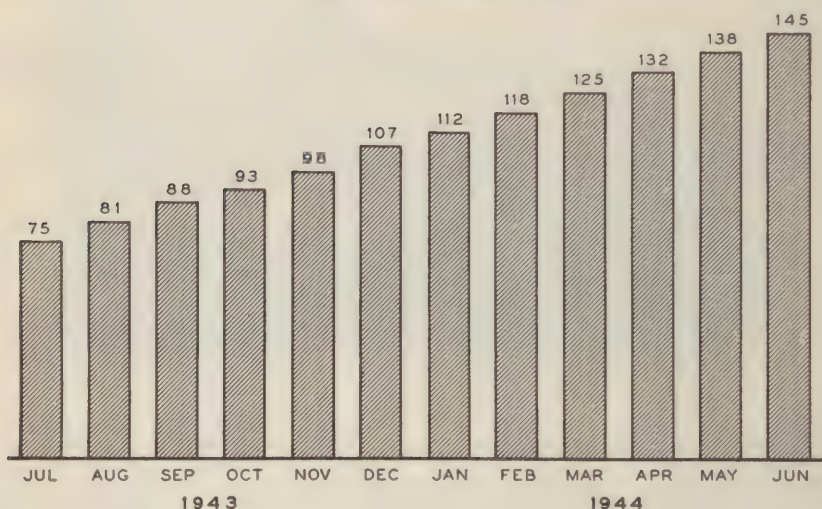
In June 1944, 2,300,000 voluntary allotment checks amounting to 145 million dollars were issued. Although the volume of regular monthly mailing of family allowance and allotment checks nearly doubled in size during the fiscal year, the 5,900,000 checks covering the regular June payment were delivered to the post office by 10 a. m. on 1 July 1944.

With the initiation of the class B allotment system for the purchase of War Savings Bonds by military personnel, an intensive promotional campaign was undertaken. Purchases increased steadily throughout the year, with the exception of 1 month. The monthly value of effective allotments continued to increase each month, reaching \$41,000,000 on 30 June 1944, compared with \$23,000,000 the year before.

Because of the large number of troops going overseas, where additional pay was received and where only limited need for expenditures existed, major efforts were directed toward increasing bond purchases

by troops just prior to embarkation. Early in June 1944 the new \$10 GI bond for military personnel was announced. All remaining installment plan purchases, other than those under class A pay reservation for civilians, were terminated during the month in which payment for a bond was completed, so that all installment accounts would be closed by 31 August 1944. Thereafter the Army War Bond Office at Chicago would issue bonds only for military personnel overseas or in tactical organizations. In addition, this office handled bond purchases by civilian employees of the War Department wherever the class A pay reservation plan was not in effect, based upon bond issuance schedules properly certified that pay deductions actually had been made instead of on the basis of allotment authorizations on file. Bonds would be issued by local disbursing officers for military personnel in the United States, Alaska, Hawaii, Panama, Puerto Rico, and Virgin Islands, except those in tactical organizations.

CHART 62
ALLOTMENTS PAID TO DEPENDENTS
IN MILLIONS OF DOLLARS



While the issuance of bonds for personnel in tactical units and overseas would be somewhat slowed, the plan minimized the possibility of over-issuance of bonds and virtually eliminated allotment audit requirements. Moreover, demobilization procedures were greatly simplified, since there would be no installment refunds to be made. Termination of purchases could be accomplished by the soldier simply notifying his personnel officer. Bond purchase plans were flexible, since a soldier might make more than one allotment and might use any combination of plans starting as low as \$7.50 a month.

As a result of war bond promotional efforts, civilian employees of the War Department in June 1944 were buying war bonds worth 22.4 million dollars monthly, or 10.6 percent of pay roll, through the

amended class A pay reservation plan. Participation included over 1 million employees, or 91.3 percent of personnel. Under this plan bonds were issued by local disbursing officers. Liquidation of the original class A pay reservation plan was largely accomplished; by 30 June 1944, 97 percent of the funds originally received had been disbursed for bonds, refunded to subscribers, or transferred to the field for the issuance of bonds locally.

Records of allotments by military personnel for the payment of premiums on United States Government (class D) or National Service (class N) life insurance were maintained centrally. Payment of the aggregate premium was made monthly to the Veterans' Administration. The amount of insurance in force under class D and class N plans approximated 90 billion dollars, or a greater amount than was carried by all commercial insurance companies combined. During 1944 the number of effective allotments rose from 7,600,000 to 9,800,000; and the aggregate monthly premium increased from 38 million dollars to over 52 million dollars. The records of the Veterans' Administration were reconciled with those of the War Department, and a complete master file listing was prepared as of 31 December 1943.

Through their commanding officers, soldiers might deposit money and receive interest at 4 percent. While this activity was relatively small, it grew in volume. On 30 June 1944 there were over 330 thousand accounts with balances totaling 85 million dollars, compared with 160 thousand accounts totaling 29 million dollars on 1 July 1943.

In April 1943 facilities were set up so that military personnel overseas could make intermittent transfers of funds to the United States through disbursing officers, who transmitted instructions by air transport. In June 1944 the number of these transfers was nearly 300,000 and the value, including cash purchases of war bonds, was nearly 35 million dollars, exceeding, with one exception, the volume for any preceding month of this rapidly expanding service. In the Finance Offices, United States Army, at New York and San Francisco, where the messages were received and payments dispatched, less than 3 days' transactions remained in process on 28 June 1944.

During the year banking facilities, heretofore established only at Army posts, camps, and stations, were extended to Army hospitals and to industrial plants and housing developments of War Department contractors. On 30 June 1944, 251 banking facilities had been established or authorized, as compared with 164 on 30 June 1943.

Industrial procurement payments by the War Department for the fiscal year 1944 amounted to about 34 billion dollars. This represented about 40 percent of the total industrial production of the country, and equaled the average annual total industrial production during the period 1935-39. Payments to common carriers by the War Department amounted to a billion and a half dollars in 1944. Thirteen million commercial invoices were paid by Army disbursing officers, and another 13 million transportation bills were paid by the Finance Office, United States Army, Washington, D. C. The number of unpaid bills on hand in these disbursing offices on 30 June 1944 represented less than 15 days' lag.

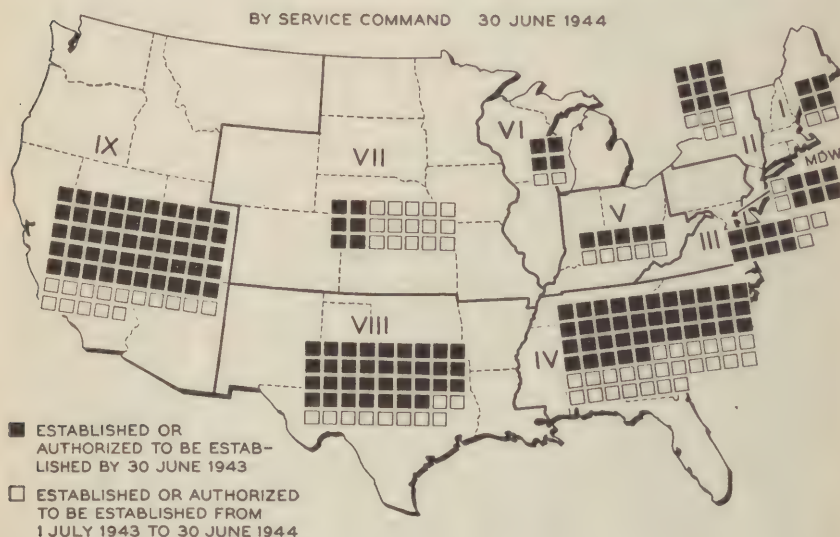
Services in the nature of aids to producers of war goods were administered under the direction of the Fiscal Director, Army Service Forces, to whom this responsibility was delegated by the Secretary of

War. Since July 1940, approximately 4,500 advance payments to 1,650 contractors have been authorized, to enable them to start and continue production. Nearly 6 billion dollars was advanced, of which more than 4 billion dollars was recouped by deductions from payments made for war materials delivered, leaving a balance of less than 2 billion dollars outstanding. During the fiscal year 1944, the monthly average rate of advance payments was 123 million dollars, compared with a monthly average of 210 million dollars in the fiscal year 1943. Recoupments during the fiscal year 1944 exceeded advances by 277 million dollars, whereas during the preceding fiscal year recoupments were 489 million dollars less than advances.

CHART 63

BANKING FACILITIES

AT ARMY POSTS, HOSPITALS AND INDUSTRIAL DEVELOPMENTS



Between 9 April 1942, the start of the program, and 30 June 1944, authorized loans of 6.8 billion dollars were guaranteed by the War Department of which 6 billion dollars were actually loaned. These were loans made by commercial banks to war contractors on which the War Department, as a result of its guaranty agreement, was liable, on an average, for 86 percent of the amount of the loan. The assumption of contingent liability involved approval of the risks in each case through the Federal Reserve banks and determination by the War Department that the work financed was necessary to the war effort. Approximately 4,550 loans were made under the program; and on 30 June 1944, 1.5 billion dollars was outstanding in the hands of borrowers on which the War Department's contingent liability amounted to 1.2 billion dollars. Of these 4,550 loans, 47 percent were for amounts of \$100,000 or less, and 87 percent were for amounts less than \$1,000,000. Of the total dollar amount, \$99,000,000 was in loans under \$100,-

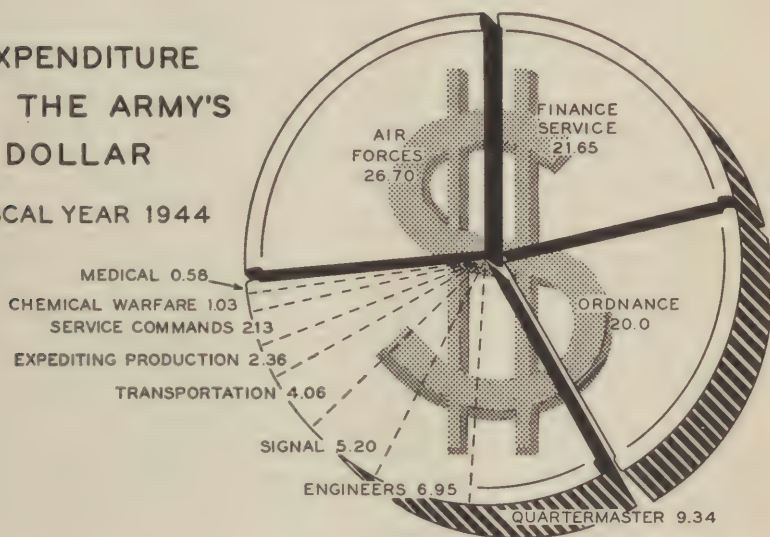
000; \$718,000,000 in loans between \$100,000 and \$1,000,000 and \$5,200,000,000 in loans over \$1,000,000.

In establishing War Department policy for and providing staff supervision over insurance and official and contract bonds, the Army Service Forces developed a loss and salvage service which conserved critical materials and items. Methods of determining and controlling costs of contractors' pensions, annuities, or similar programs were established, which resulted in large savings to Government; a simplified and less expensive insurance program for Army exchanges and Army Motion Picture Service was put into effect also during the year. Insurance arrangements were concluded on 30 foreign War Department projects; and 198 settlements under the War Department Insurance Rating Plan were completed, with resultant substantial savings under normal costs.

CHART 64

EXPENDITURE OF THE ARMY'S DOLLAR

FISCAL YEAR 1944



The renegotiation of large numbers of War Department contracts and the extensive termination of contracts by procurement officers had its repercussions upon the fiscal machinery of the War Department. Particular care had to be taken by disbursing officers in making payments on termination settlements, especially on settlements of cost-plus-a-fixed-fee contracts. These latter were reviewed with care by the General Accounting Office. Renegotiation resulted in the recoupment of funds which were deposited to the credit of the United States Treasury and also led to changes in contract payments. Both of these activities expanded during the fiscal year 1944.

To enable disbursing officers to make payments on behalf of the War Department, the Fiscal Director arranged cash advances or credits with the Treasury Department, to be available at the times and places needed. The Army Service Forces also made certain that there were sufficient disbursing offices staffed and equipped to pay all War Department bills and pay rolls promptly. Staff assistance

was provided disbursing officers through research, special studies, preparation and revision of regulations and other instructions, and through response to questions of interpretation. Shortages and losses in accounts were investigated, looking to recovery of the amounts involved or legislative relief.

During the fiscal year 1944 the Army Service Forces issued new or revised War Department technical manuals covering the organization and functions of disbursing offices, pay and allowances of officers, pay and allowances of enlisted personnel, travel allowances of War Department personnel, payment for supplies and personal services, agent finance officers, finance service in mobile field units, model disbursement and collection vouchers, blank forms, and official mileage tables. These instructions helped insure that War Department funds were properly expended. Special attention was given to clarifying War Department policy on travel allowances of officers; to assembling adequate information on which to base the pay settlements of personnel missing in action or captured; to publishing instructions on temporary "spearhead deposits" by personnel about to enter combat areas; and to providing increased pay for glider personnel, and holders of expert and combat infantryman badges.

In discharging its responsibility to account for all funds made available to the War Department, the Army Service Forces standardized the record keeping for War Department funds, obligations, and expenditures through the issuance of the uniform War Department Fiscal Code and the Manual of Fiscal Accounting for Field Installations. In addition to reducing the burden of accounting transactions, this standardization promoted uniform reporting of data. The Army Service Forces performed the purely administrative function of keeping the books on all appropriated funds, trust accounts, and receipt accounts of the War Department. During the fiscal year 1944 nearly 25 million vouchers were accounted for currently. Separate accounts were maintained for 213 appropriations and 1,022 project accounts; the data were accumulated in a manner which permitted summarization by procuring or administering agency, and by the object of expenditure. By the use of teletype and air mail for the expeditious transmission of accounting information, consolidated fiscal reports based on uniform accounting records were published within 20 days after the close of each month.

During 1944 fiscal offices were established in all major foreign theaters of operation to render the necessary fiscal services. A complete organization was provided each major theater, and comprehensive instructions and facilities furnished. Problems peculiar to fiscal operations outside the continental limits of the United States were anticipated or dealt with as encountered. As a result, a workable system for the receipt and disbursement of War Department funds and the accounting and reporting thereon was established. Fiscal information was available for use in determining War Department policy on such matters as lend-lease, reciprocal aid, and foreign exchange.

The Army Service Forces, under its audit responsibility, endeavored to determine the propriety of transactions as promptly as possible, to cause as little disruption of administrative processes as was consistent

with an adequate audit, to perform the audit as efficiently as possible, and to anticipate problems which would confront the War Department and its contractors when the war ended. In 1943 the impracticability of detailed audits was recognized and the practice of selective auditing was initiated. This practice was extended in 1944 to substantially all the audit operations of the War Department.

The Army Service Forces had final audit responsibility for non-appropriated funds, and final accountability for all military property. The final audit responsibility for appropriated funds rested with the General Accounting Office; here the responsibility of the Army Service Forces was one of administrative examination of the propriety of transactions and the condition of records before final audit. For most War Department transactions, the General Accounting Office decentralized its audit. This facilitated clearance of the accounts of disbursing officers and final settlements with contractors. The General Accounting Office audit of a majority of War Department contracts was completed within a period of 90 to 120 days after the payment. Establishment of prepayment controls in the nature of internal accounting procedures, including independent examination of basic documents, reduced expensive after-payment audits.

During 1944 the Army Service Forces prepared and published manuals covering administrative audit procedures for cost-plus-a-fixed-fee supply contracts; termination accounting procedures for fixed price supply contracts; accounting for Government-owned property in the hands of private contractors; audit procedures for non-appropriated funds, Quartermaster Corps laundries and dry-cleaning plants; and relations with the General Accounting Office.

A uniform termination article for war contracts was developed in 1944 by the major procuring agencies. It contained a limitation of 6 percent profit on cost after termination and a standard definition of costs. Field accounting representatives to act for all the services and the Army Air Forces were trained and assigned to offices of War Department contractors to do termination accounting work for the Government on subcontracts as well as prime contracts. The officer assigned to each plant was qualified to recommend disposals of property, and to facilitate clearance of stocks of war material. At one large plant as many as several hundred contracts were terminated weekly.

Surveys of cost-plus-a-fixed-fee audit procedures were made at aircraft and ordnance plants, and recommendations developed. Questions of reimbursability of overhead items under cost-plus-a-fixed-fee contracts were promptly cleared through conferences with the General Accounting Office. The General Accounting Office decentralized the audit of cost-plus-a-fixed-fee contracts to major industrial plants in 1943 and expanded this service in 1944. The General Accounting Office auditor worked side by side with the War Department representative on the premises. Payments were audited and cleared, or adjusted, while pertinent information was current. This improved relations with the contractors and aided renegotiation as well as final settlement, since contractors were assured of the correctness of the amounts received. At the same time the proper use of Government funds was assured.

In 1944 the audit of civilian pay records was decentralized to the four regional accounting offices. This type of audit procedure speeded final determination of the propriety of all payments from appropriated funds.

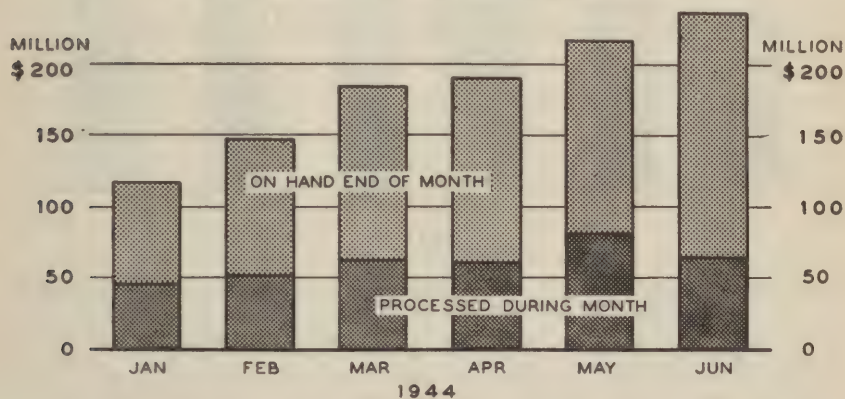
The fiscal year 1944 was a period when the Army Service Forces endeavored in many ways to make its fiscal services as efficient as possible to meet the demands of a fully organized army, widely engaging the enemy.

Chapter 16. MAINTENANCE SERVICE

Maintenance activities by the Army Service Forces developed into an operation of large scope during the fiscal year 1944. With the steady expansion of the Army and the accompanying increase of equipment assigned to troop units, the work loads thrown upon ASF repair shops redoubled. Equipment becoming unserviceable through use in training and maneuvers, together with used equipment being turned in by alerted units destined for overseas movement were sent to maintenance installations for repair. Large quantities of unserviceable equipment also were returned from overseas. The time required to make repairs increased as skilled labor became more difficult to obtain and as equipment needed more attention.

CHART 65

ESTIMATED VALUE OF UNSERVICEABLE EQUIPMENT FIFTH ECHELON MAINTENANCE SHOPS



During January 1944 the value of unserviceable equipment on hand or assigned to ASF fifth echelon, or base shops, amounted to 116.5 million dollars. In June 1944 this value had increased to over 234 million dollars. At the same time the amount of material processed each month by fifth echelon shops was 50 percent greater in June than in January. For the month of June the amount of equipment processed was nearly twice as large as in January.

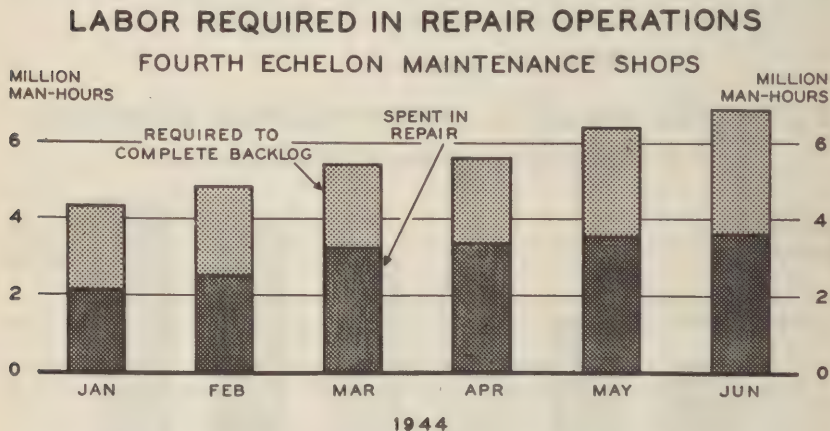
The repair load at fourth echelon and combined shops also increased during the last 6 months of the fiscal year. The number of man-hours spent on repair work in these shops during June 1944, was 43 percent greater than in January. Nonetheless, the backlog increased some 50 percent.

In 1944 approximately 14 million pairs of shoes, 32 million items of clothing, and 12 million items of personal equipment were turned in to ASF shops for repair. By June 1944, the number of shops repairing clothing and equipage had been increased to 400.

The maintenance services provided by the Army Service Forces were almost exclusively fourth and fifth echelon maintenance. Preventive maintenance and minor repairs were the responsibilities of the troop units to which equipment was assigned. Only items requiring large-scale repair were turned over to combined maintenance shops at posts or to fifth echelon shops located at various points.

Shoe maintenance afforded a typical example of ASF maintenance activities. At all camps there were shoe repair facilities where Army shoes were ordinarily resoled twice unless the upper parts were too badly damaged to justify further use. After the second resoling at camps, worn shoes were sent from the post maintenance shops to two large plants operated under the supervision of the Quartermaster

CHART 66



General in Georgia and in Missouri. Here the shoes were completely rebuilt. They were then shipped to depots and to posts for reissue and use by troops in training or by troops stationed in the United States. Rebuilt shoes looked and wore like new shoes. If anything, they were more comfortable since the leather was more pliable. Some 4,300,000 pairs of shoes were rebuilt during the fiscal year. This was equivalent to a saving of about 16 million dollars in the procurement of new shoes and a saving of more than 10 million feet of critical leather.

The repair of wheeled vehicles was the largest single type of maintenance activity during 1944. On 1 November 1943, fifth echelon automotive shops were transferred from direct administration by the Chief of Ordnance to operation by service commands. At the same time the Chief of Ordnance retained technical direction of the work performed by these shops. The volume of vehicles turned in for complete overhaul and repair grew to such large proportions that

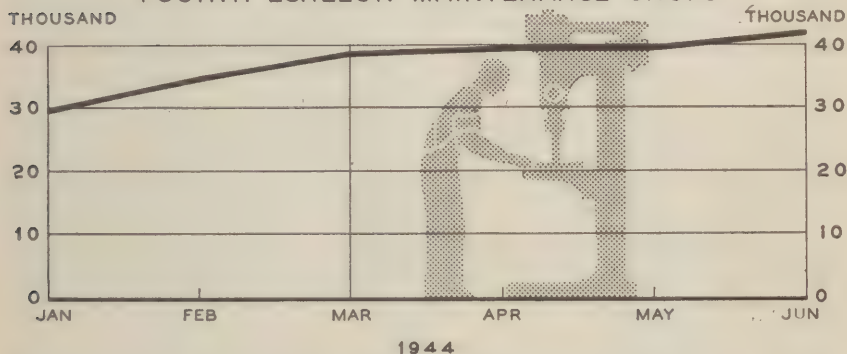
special measures had to be taken to handle the resulting load. Some 85,000 transport vehicles were repaired in these shops during the year for overseas shipments. Other vehicles were returned to using units or to motor pools for reissue. Service commands reported weekly on the number of wheeled vehicles awaiting repair. The Chief of Ordnance published monthly quotas of repairs to be performed by each service command. As far as possible the load between service commands was equalized after it became apparent in February that the Eighth and Ninth Service Commands were receiving over half of the vehicles needing complete overhaul.

In April 1944 the Chief of Ordnance established inspection teams to check on automotive shop operations. Steps were also taken to put shops upon a production line basis and to standardize their performance. In addition, the Chief of Ordnance dispatched advisors on automotive maintenance to overseas theaters to help in their repair activities.

CHART 67

NUMBER OF EMPLOYEES

FOURTH ECHELON MAINTENANCE SHOPS



The repair of small arms weapons, of clothing, and of other types of equipment presented no unusual problems. Large quantities of engineer equipment were returned from the Northwest Service Command after completion of the Alaska Highway. Much of this equipment was repaired under contract. Most bottlenecks had been eliminated by the end of the year.

An adequate supply of spare parts continued to be a critical maintenance problem throughout the year. As already mentioned, the spare parts problem had several different aspects. Particular attention was given to insuring that adequate spare parts lists were prepared for all major items of equipment. Production difficulties were very few. On the other hand, deficiencies in distribution of spare parts created most of the shortages which delayed the rapid repair of equipment. The large number of spare parts to be cataloged, binned, and distributed created situations where spare parts were unavailable because their location could not be determined. This problem was being attacked as rapidly as possible at the end of the year.

Maintenance Instructions

Early in the year a basic maintenance manual was published by the War Department to familiarize all parts of the Army with the elementary principles of maintenance and to clarify maintenance policies and procedures. This manual was revised and was being reprinted at the end of the year. To standardize maintenance nomenclature, War Department Circular No. 246, 1943, was published defining all maintenance terms for common usage throughout the Army. To lighten the maintenance burden, ASF Headquarters gave particular attention during the year to preparing adequate instruction manuals for operators of equipment. The latest maintenance information was included in these instructions so that all essential information about a piece of equipment was contained in a single manual. These manuals informed operators how to maintain their piece of equipment and acquainted them with the proper nomenclature of the various parts. Methods for replacing these parts were also included in the basic operating instructions.

Investigation revealed that no systematic and detailed information was being provided operators about the proper lubrication of equipment. Accordingly, a program was developed to insure that proper lubricating instructions accompanied all pieces of equipment issued by the ASF. A standardized basic lubrication fitting developed by the Ordnance Department was adopted by all other technical services. This proved a great aid to proper lubrication. Various types of lubricants were tested and standardized during the year. Lubrication orders were attached to or carried with mechanical equipment when issued. These orders were illustrated on waterproof cards or labels prescribing first or second echelon lubricating instructions. Troop commanders were made responsible for obtaining and complying with all lubrication orders applicable to the equipment provided them. These orders as issued were included in the List of Publications for Training.

A uniform series of supply catalogs was prepared by the technical services during the year to provide exact information on the requisitioning of spare parts. Common stock numbering and cross-referencing of interchangeable parts, tools and supplies were also developed.

Another particular effort during the year was the clarification of maintenance responsibilities between various parts of the Army. Charts were prepared for various pieces of equipment showing just what types of maintenance operations were to be performed by the operator, by mechanics attached to troop units, by maintenance companies in the field, and by the shops of the Army Service Forces. In some instances, where similar types of equipment were provided by various technical services, maintenance responsibility was centralized. For example, automotive shops supervised by the Chief of Ordnance were made responsible for the repair of all types of wheeled vehicles. The Quartermaster General was given responsibility for the repair of all storage-handling equipment.

Shop Facilities

Adequate maintenance required proper shop facilities equipped with suitable tools and staffed with sufficient trained personnel. A number

of steps were taken during the year to improve shop procedures and to effect economies in the utilization of facilities which would avoid wastage of manpower, space, and supplies. One step modified jurisdictional lines between service commands. Shops in a particular area were directed to support the maintenance work of other shops in the area regardless of service command boundaries. Another step was reconsideration of the location of maintenance facilities to insure that shops were located in relation to troop density.

The most important change introduced during the year was the development and inauguration of the combined maintenance shop plan. This step integrated all maintenance activities at individual posts or similar installations where such integration would result in the more economical use of space, equipment, and personnel. Previously repair shops were operated at each post for each technical service concerned; all the larger posts had an ordnance shop, a quartermaster shop, a signal shop, and an engineer shop. Each of the shops required separate administrative staffs, separate supply units and storage space, and separate personnel, often in competition with each other. It was not unusual for each of these shops to have carpenters, electricians, and mechanics. Any exchange of service depended upon idle time in a particular shop. When an exchange was performed, the receiving service had to pay for it, thus entailing considerable bookkeeping. Altogether, this was a cumbersome system, wasteful of effort, skill, and supplies.

To remedy these defects the combined shop plan was developed. All maintenance operations at a post were consolidated under the direction of a single maintenance officer and an administrative staff exercising central control over all operations, storage, and utilization of labor. Individual shops were set up along functional lines such as carpenter shops, automotive shops, and electrical shops. This plan was first tested at Fort Knox, Ky., during August 1943. All service commanders and other personnel were invited to inspect its operations. Comments and recommendations from service commands and technical services were incorporated into the final revision of the plan. The combined shop was put into effect at all posts, camps, and stations in the United States by War Department memorandum issued on 7 September 1943. Subsequently, the plan was extended to Air Forces installations, ASF depots, and ports of embarkation. Operating procedures for combined shops were prepared and distributed to service commands. Experience by the end of the year had demonstrated that the basic principles of this integration were sound and that definite economies were achieved.

A program was also inaugurated during the year to develop improvements and standardization in the tools and tool kits used by repair shops for maintenance work. Analysis of individual sets revealed that identical items were often procured and issued by several technical services, resulting in duplication of effort, excess stocks, and complication of supply procedures. Standardized tools and tool sets led to a reallocation of procurement and issue responsibilities so that a particular tool was handled by the technical service having primary interest in it. The number of tools procured was substantially reduced by this procedure. For example, of 16 tool sets studied as a group it proved possible to standardize 8 basic sets serving the same purpose.

A study was made comparing the tools carried by an engineer maintenance company as organizational equipment with the tools carried by the mechanics in the company in their own individual tool sets. As a result, 1,000 items were eliminated from the company.

A tool conservation program was prepared and published as ASF Circular No. 132, 1944. This outlined basic policies on economical use of tools and established tool lists and sets. Thereafter technical services took additional steps to reduce the number of unnecessary and diverse types of tools. A standard listing of tool equipment was being compiled at the end of the year so that standard nomenclature and cross-indexing of each item might be undertaken.

Reclamation

Reclamation and salvage activities were necessarily closely allied to repair work. In processing equipment turned in for repair, shops often decided that the piece of equipment was so badly worn that repair was impossible or uneconomical. Accordingly the item was salvaged for disposal as scrap. In doing this it was often possible to reclaim individual parts with functional usefulness. In order to develop this reclamation activity, it was necessary to establish a means of publicizing the methods for reclaiming an item of equipment that could be used by all shops. For this purpose a reclamation procedures bulletin was established in which all technical services reported and explained reclaiming processes developed in their shops or by their research departments. These bulletins were distributed to all maintenance shops.

In December 1944 an ASF circular was issued which defined the objectives of the reclamation program and assigned specific responsibilities to the technical services for improving reclamation standards. By the end of the year reclamation was proving a valuable means of augmenting the supplies of necessary spare parts.

Changing supply situations made certain reclamation activity unnecessary and uneconomical. In order to keep reclamation practices entirely current, information about desirable reclamation was included in the War Department supply bulletin on the repair of critical and nonessential items. This bulletin indicated changes in supply requirements in order that reclamation activities might be geared to immediate maintenance and supply needs.

Maintenance Engineering

Throughout the Army Service Forces particular attention was given during the year to engineering changes in equipment which would simplify maintenance in military operations. Obviously, maintenance considerations could not in themselves dictate the military characteristics of equipment. On the other hand, particular attention to operating and repair conditions often extended the useful life of military supplies. In all research activities during the year additional consideration was given to maintenance factors.

For example, a study of internal combustion engines used in military equipment led to the preparation of a preferred list of such engines. This list materially reduced the number of makes and models then in use and was adopted by all technical services for procurement. The standardization of a few specific models of engines

simplified maintenance considerably, since it provided for a maximum interchangeability in the use of parts. At the same time it reduced the great supplies of spare parts that had to be kept by shops and by maintenance troop units in the field. Similar preferred listings were established for electrical generators and Diesel engines. At the end of the year a number of other items were under study, such as storage batteries.

In addition to engines, the ASF reduced the number of types and models of air compressors, pumps, radio receivers, telephone switchboards, and photographic and other communications equipment. Improvements in maintenance were realized by new lists of interchangeable parts and accessories.

Standardization reduced and simplified the maintenance required for prime movers and all towed equipment. Standard sets of running gears and landing gears were designed employing a maximum number of standard components in their assembly. Standard sets of gears on which all technical services might build special purpose trailer equipment were furnished. Standard sets of dollies were developed for converting semitrailers into full trailers.

Modifications necessary to improve the operation of industrial type internal combustion engines through the use of standard Army fuels and lubricants were designed and introduced during the year. In making modifications, priority was given to the requirements of overseas theaters while the program in the United States proceeded as rapidly as possible. Reports on equipment failures or unsatisfactory field operation of equipment were analyzed to determine whether additional preventive measures were needed. A constant search to discover potential failures of equipment was an important part of maintenance engineering. In order to provide data on repeated failures and deficiencies in equipment, a standard report from field units on unsatisfactory equipment was introduced. Another maintenance report on maintenance neglect was filed by repair shops when equipment turned in showed signs of improper first and second echelon maintenance.

Inspection and Reporting

The inspection staff in ASF headquarters in 1944 visited almost every maintenance installation in the United States. Its observations led to recommendations for improvements in methods and procedures employed by shops.

Although a wide variety of maintenance reports was prepared throughout the Army and collected by the technical services, there was at the beginning of the fiscal year no systematic, dependable, reporting system on repair operations. For this reason a thorough study was made of all maintenance reports in order to develop standard information to guide administrative activities. A standard maintenance report was devised and put into effect in all ASF installations throughout the United States during the year. Data was consolidated from basic shop reports and forwarded by service commands and technical services to the Maintenance Division in ASF headquarters. Separate reporting techniques had to be used for fifth echelon shops and for fourth echelon and combined echelon shops at posts. At the end of the year a common reporting system which would provide the same

basic information about combined and fifth echelon shops was in preparation.

Conclusion

During the year an agreement was made with the Army Air Forces that quartermaster repair facilities at Army air fields and posts would report to the Quartermaster General. At the request of the Army Ground Forces, ASF repair installations were directed to devote a large part of their automotive repair facilities to support the automotive repair activities of the ground forces. Similar assistance was arranged for the Navy and the Marine Corps. ASF shops also assisted Army Ground Forces units in the maintenance of other equipment besides automotive.

The fiscal year 1944 represented a period of orientation in the development of maintenance activities as a unified operation. Basic policies and procedures were established. The major problems in the field of maintenance were identified. Avenues of attack were laid out. With this as a beginning, it was expected that all repair work done by the Army Service Forces would improve substantially in the next year.

Chapter 17. TRAINING SERVICES

The job of the Army Service Forces extended beyond the supply of the Army and the performance of many different administrative services for its operation. Supply and administration were also responsibilities of every echelon of command. In the performance of these duties as required at each level, commanders needed trained officer personnel and trained troop units. The training program of the Army Service Forces had as its first objective the provision of troop units to overseas commanders and their subordinate commands.

There were separate service and supply units in Ground Force divisions, in corps, and armies. There were other units such as port battalions, general hospitals, and communications battalions which operated the overseas supply bases and services behind tactical troops. Service troops with tactical units were created and trained by the Army Ground Forces. Service troops for theater operations as a whole were activated and trained by the Army Service Forces. By the fiscal year 1944 the Army Ground Forces and the Army Service Forces had agreed upon the types of units each would activate so that duplications in type were practically eliminated. In general the division of responsibility in setting up and training service troop units provided that the Army Ground Forces would activate and train units for divisions and for corps, while the Army Service Forces activated troop units required for communication zones in theaters.

The number of units trained by the Army Service Forces was determined by the War Department. Recommendations were submitted by the Army Service Forces in the preparation of regular revisions of the War Department troop basis. The ASF estimated the types of service and supply units which would be needed by overseas theaters. In addition, commanders overseas prepared their own estimated requirements in the light of the plans for military operations. The officially authorized troop units were then announced by the War Department.

Activation schedules for the Army Service Forces were based upon a War Department forecast of troop requirements for 6 months in advance. As emergency demands arose from overseas theaters the ASF had to activate additional units.

The principal change introduced by ASF in activation procedures during the fiscal year 1944 was the introduction of preactivation training discussed below. Otherwise the time table for the activation of nondivision units set up in April 1943 was adhered to during 1944.

Demands for ASF training units increased during the fiscal year as military operations expanded overseas. The strength of authorized units of the Transportation Corps, for example, expanded over 80 percent between 1 July 1943 and 30 June 1944. The October 1943 plan for the 1944 troop basis increased the number of signal units by

one-third. In order eventually to meet the requirements of the European theater of operations, signal training battalions in the United States were stripped of every available man, specialists were released from the Army specialized training program, and other emergency measures were taken.

One major change was made during 1944 in setting up tables of organization and equipment for service troop units. The wide variety of special jobs to be done overseas required the creation of many different types of units. For example, an overseas commander included among his Quartermaster troops, truck units, laundry units, gasoline supply units, shoe repair units, bakery units, and depot units. Transportation Corps units used overseas included harbor craft companies, amphibian truck companies, and port battalions. In order to reverse the trend toward greater and greater specialization, the ASF began to create composite units which could perform more than one type of work. The creation of composite units not only avoided many small organizations with their own headquarters personnel, but also simplified the task of the theater commander in determining what types of units he needed. The new practice also reduced the number of tables of organization required for ASF. Most composite units were created within a single branch of service such as the Signal Corps, the Quartermaster Corps, or the Transportation Corps. For example, many Signal Corps service units were reduced to one type—the signal heavy construction company for the installation of communications systems in an overseas theater of operations. In a few instances it was possible to set up composite units with personnel for more than one branch such as a unit with both ordnance and signal personnel.

Training Strength

Total commissioned and enlisted personnel in training by the Army Service Forces during the fiscal year 1944 reached an all time peak of 713,775 persons during September 1943. This number had been reduced to some 505,000 by 30 June, which was 140,000 less than training strength at the beginning of the year. Substantial declines in trainee strength occurred in every program except those for special training units and replacement training.

Replacement Training

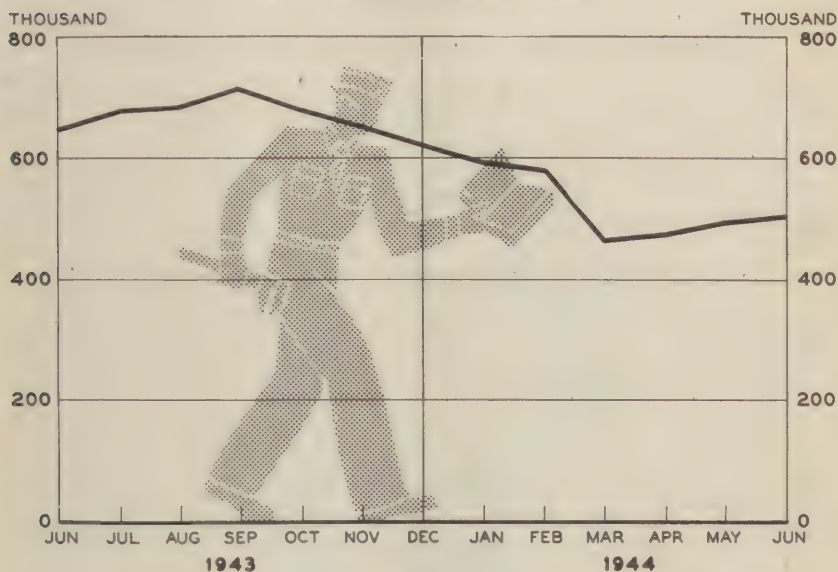
At the start of the fiscal year the Army Service Forces was operating 17 replacement training centers with an over-all capacity for training 158,787 enlisted men. There was one replacement training center each for Chemical Warfare Service, Finance Department, Military Police, Ordnance Department, and Transportation Corps personnel. Two replacement training centers were operated for the Quartermaster Corps, three each for Engineers and Signal Corps, and four were utilized to train Medical Department personnel.

During the year 325,000 men received loss replacement training. There was a marked decrease in the number of loss replacements trained in some centers compared with 1943. Medical Corps replacements were about one-half of the 1943 output of 166,000. Only 53,000 engineer replacements were trained in 1944, as against 75,000 in the previous year. The Quartermaster Corps showed the sharpest reduc-

tion by training only 58,000 men; compared with 150,000 for the year before.

In September 1943 the Medical Department replacement training centers at Camp Pickett, Va., and Camp Robinson, Ark., and the Quartermaster replacement center at Fort Francis E. Warren, Wyo., were inactivated. To provide realistic training in port, water, and rail transportation, two additional replacement training centers of limited capacity were opened in January 1944. Camp Gordon Johnston, Fla., was established for marine training; and Camp Claiborne, La., was selected to provide rail training.

CHART 68
ASF MONTHLY TRAINEE STRENGTH
ALL ASF INSTALLATIONS



On 1 September 1943, the training program for all Army Service Forces replacement training centers was increased from 13 to 17 weeks. The basic military course was increased from 4 to 6 weeks; 8 weeks were devoted to technical or specialist training; and 3 weeks to training under field conditions. In May 1944, all military training, excluding the technical phases, was standardized. In the 6-week basic military program, every soldier received the same training regardless of his branch of service. Standard courses were prescribed for clerks, motor vehicle operators, anti-aircraft machine gunners, automotive maintenance men, and bakers and cooks. Time allotted for concurrent training in basic military subjects during the technical training periods was also fixed. The final 3 weeks were spent in basic team training while living in the field.

Of the total number of men trained in replacement training centers during the fiscal year, 31 percent were assigned to troop units in the United States and overseas, while 33 percent were sent to replacement

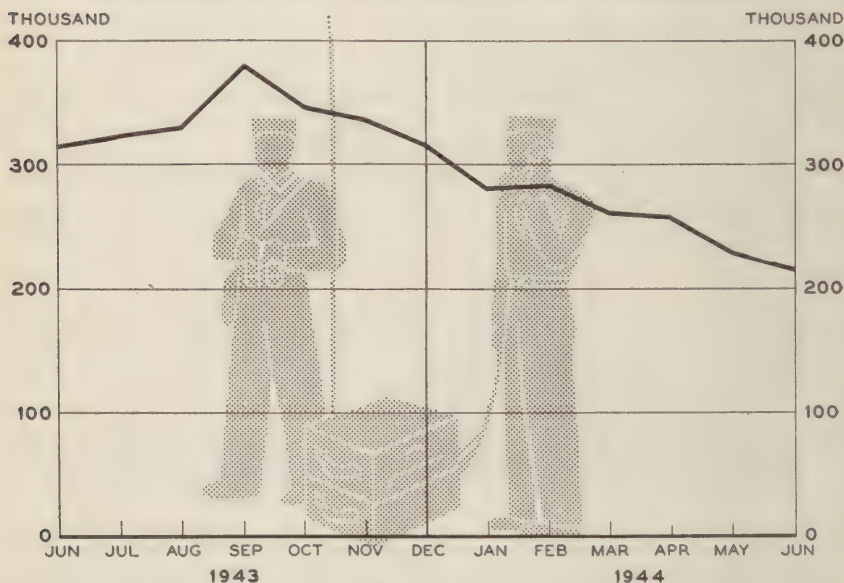
depots and thence overseas. Another 20 percent were sent to specialist schools for further training, and the remainder went to officer candidate schools, took courses under the Army specialized training program, or were assigned to various installations in the zone of the interior.

Unit Training

An average of 1,760 table of organization units, representing 298,000 men, were in training at all times during the fiscal year 1944. These units consisted of over 130 different types, organized to perform as many different functions. Officers and enlisted men were trained in the wide variety of individual skills required for the many different types of units. In addition the units were trained as cohesive organizations.

CHART 69

STRENGTH OF T/O UNITS IN TRAINING



The number of units in training on 15 June 1944 afforded some idea of the types prepared for overseas service. The number of individual units should also be compared with enlisted strength of these units to obtain a true picture of ASF unit training activity. The strength figures in the following table included about 16,000 enlisted men who were detached from units for training at ASF schools.

Reports from overseas theaters indicated that more time in unit training should be devoted to basic military subjects, which was accomplished in September 1943 by lengthening the basic military training period for all units from 4 to 6 weeks. The total initial training period for ASF units was increased to 17 weeks, of which a minimum of 11 was to be devoted to training together as a unit. Greater emphasis was placed upon teamwork and realism in training: "battle

inoculation" courses, with close overhead machine-gun firing, became a general requirement.

Unit training, ASF, 15 June 1944

Types of units	Number of units	Enlisted strength
Quartermaster.....	426	62, 737
Transportation.....	177	46, 736
Engineers.....	220	43, 255
Military police.....	61	22, 587
Medical.....	216	21, 169
Ordnance.....	154	14, 418
Signal.....	71	13, 221
Chemical warfare.....	25	3, 223
Adjutant (postal, censorship, and machine records).....	80	2, 538
Finance.....	28	602
Special services.....	5	562

Extended mobilization training programs were published in 1944 for the training of units which were filled with a high percentage of men graded in classes IV and V on the Army general classification test, where training tests indicated that additional time was needed to develop the units to a satisfactory level of proficiency.

During 1942 and the early part of 1943, replacement training centers had been a source of trained personnel for units to replace men lost by normal attrition during the training period. The availability of this filler personnel steadily decreased as the replacement training center output decreased and overseas requirements increased, so that by the latter part of 1943 very few men were assigned to units from this source. When it became apparent that trained fillers from replacement training centers would not be available, units were authorized an overstrength to take care of normal training attrition. As the strength of the Army approached its peak, and personnel for new units was required, authorized overstrengths were discontinued. Shifts of personnel between units were necessary in order to obtain trained personnel for units scheduled for immediate overseas shipment.

The Inspector General during 1944 inspected 719 ASF units committed for overseas movement; he found 140 of them not qualified. The principal cause of deficiencies was lack of adequate training time. In some instances, this lack arose from a demand for a unit before it had finished its training; another reason was the abnormal turnover of personnel. A vicious circle was created by the necessity of transferring trained men from units to fill an alerted unit, and later, of alerting recently depleted units before sufficient time had elapsed for the training of new personnel. Of 77 unqualified units inspected between 1 January and 30 June 1944, 43 were units demanded by overseas commanders before they had finished their training.

Training of ASF personnel kept pace during the year with the development of the armament of ASF units. In June 1943 qualification firing was prescribed for all individuals with the weapons with which they were armed. Training with crew-served weapons and the grenade launcher was extended to as many individuals as possible in addition to those regularly assigned to these weapons. The general

objective was to familiarize the personnel of ASF-trained units with all the weapons they might have an opportunity to use. Antiaircraft marksmanship training and firing, where practicable, were also prescribed. A minimum requirement for individuals in units embarking for overseas was to qualify with one regular side-arm (rifle, carbine, submachine gun, or pistol).

This policy remained essentially unchanged throughout the fiscal year. One minor change was the dropping of the requirement for the cal. .45 pistol for officers of field grade in line with the trend to replace that weapon with the carbine. The "bazooka" joined the list of weapons for which familiarization firing was prescribed. Officers were required to qualify with all the weapons used by the unit, except those for which only familiarization firing was practical.

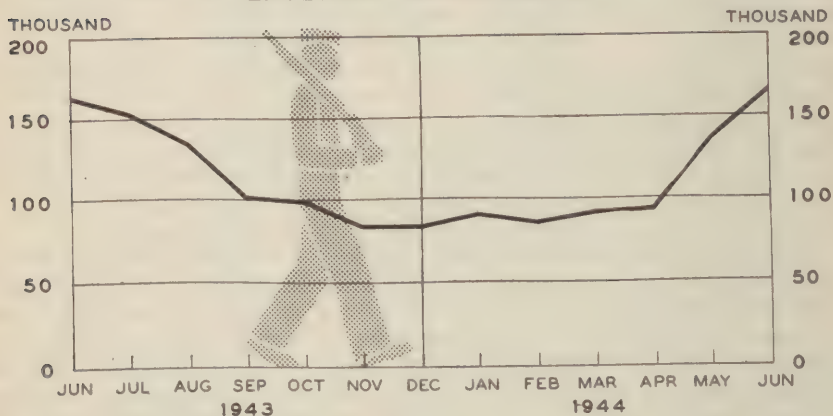
Army Service Forces Training Centers

In order to eliminate many personnel and training difficulties, 15 replacement training centers and 11 unit training centers, in April 1944, were redesignated as Army Service Forces Training Centers and were combined where located at the same post. As a result of this plan, 19 Army Service Forces Training Centers were created. Seven unit training centers were not redesignated in order not to retard current training at these centers.

CHART 70

STRENGTH OF TRAINING CENTERS

EXCLUSIVE OF T/O UNITS



Training of chemical warfare, finance, military police, and signal personnel, other than those in unit training, was conducted at one Army Service Forces Training Center for each. Ordnance Department training was conducted at two centers; Medical Department training was conducted at four centers; Quartermaster and Transportation Corps training was conducted at four centers for each service; and engineer training was conducted at six centers. The capacity of the Army Service Forces Training Centers and Unit Training Centers totaled 367,354 men.

The output of the Army Service Forces Training Centers was used to furnish loss replacements, rotational replacements, physically limited replacements for the Zone of the Interior, and cadres and fillers for newly activated units. Team training was given to those individuals who, after completion of their basic military and basic technical training, were selected as loss or rotational replacements. Units were activated within the centers with personnel which had completed basic military and basic technical training. Unit training, which was given after activation, was designed to weld these individuals into a functioning team.

The flexibility of this plan was such that when the ever-changing tactical picture in overseas theaters required special types of units, training centers were prepared to supply trained specialists as well as basically trained men on the activation date of the units needed. It was contemplated that by 1 August 1944 a majority of all ASF units would be activated at Army Service Forces Training Centers, and would be assigned a full complement of trained men on the date of activation.

Under this plan the Director of Military Training in ASF headquarters determined the numbers and categories of men to be trained each month to meet the requirements established by the War Department for loss replacements, rotational replacements, and preactivation training for new troop units. He also made certain that the proper number of men, by military occupational specialty, were trained at schools and training centers. He advised Military Personnel Division, ASF, whether sufficient personnel was available to initiate training to meet requirements, and advised Mobilization Division, ASF, about the availability of personnel in preactivation training for specific types of troop units.

At the close of the fiscal year a plan had been worked out and was ready to go into operation for the development of more competent instructors. It included thorough courses of instruction for such personnel, and a set of rigorous training standards by which instructors might be evaluated, enforced by a system of continuing supervision and corrective action. The general aim of the program was to raise the level of instruction in ASF schools and training centers and to assure that every ASF officer and noncommissioned officer in command of troops was a competent instructor.

In January 1944 representatives of the Director of Military Training went to the North African theater of operations to assist the theater commander in the conversion of the Second Cavalry Division and 11 antiaircraft and tank destroyer battalions, totaling 20,000 men, into ASF-type units. The Army Ground Forces units were inactivated upon arrival in the theater, and retrained into various types of engineer, quartermaster, ordnance, signal, transportation corps, and military police organizations. This mission was begun on 6 February 1944 and concluded on 26 March 1944. The successful accomplishment of this task was measured later in the operations which took place in the Italian campaign. Observation of operations in NATOUSA confirmed training doctrine prescribed by the Director of Military Training which placed emphasis upon basic military and field training, and leadership training of officers and noncommissioned officers.

School Training

Army Service Forces schools were designed to supplement the work done in Army Service Forces training centers by providing individual training to produce skilled specialists. Officers and enlisted men were trained in many different fields. A substantial percentage of the capacity in Army Service Forces schools was utilized to train Army Ground Forces and Army Air Forces personnel.

During 1944 many school training activities were moved from civilian to Army facilities. Much duplication between school and training center training was eliminated. Whenever duplication existed, the usual procedure was to discontinue the school course. Authorized capacity of Army Service Forces schools fell from a total of 120,000 on 30 June 1943 to 71,500 on 30 June 1944. Training was centralized in as few locations as possible and, whenever possible, schools of similar types were consolidated.

Service schools were those operated by the Army with Army personnel as instructors. The facilities might be Army-owned or leased by the Army. In a few instances, it was deemed advisable to continue the use of civilian facilities. The Judge Advocate General School was located at the University of Michigan, where the facilities of the law school were available, and the Army School of Roentgenology was continued at the University of Tennessee, which utilized X-ray facilities not available at an Army post.

The number and types of school courses depended upon requirements for specialists. Seven ordnance schools were in operation at the end of the year. The number of automotive schools was sharply decreased.

The Medical Department conducted a wide variety of training. During the year, training was instituted for physical therapy aides and enlisted physical conditioning instructors; the training of neuropsychiatrists was greatly increased. Medical Administrative Corps officers were trained as assistant battalion surgeons in a 6 weeks' course at Camp Barkley, thus effecting a great saving in the number of Medical Corps officers in divisional units. The Army School of Malariology was opened in the Panama Canal Zone in February 1944 to give a 4 weeks' course to officers and enlisted men of malaria control and survey units.

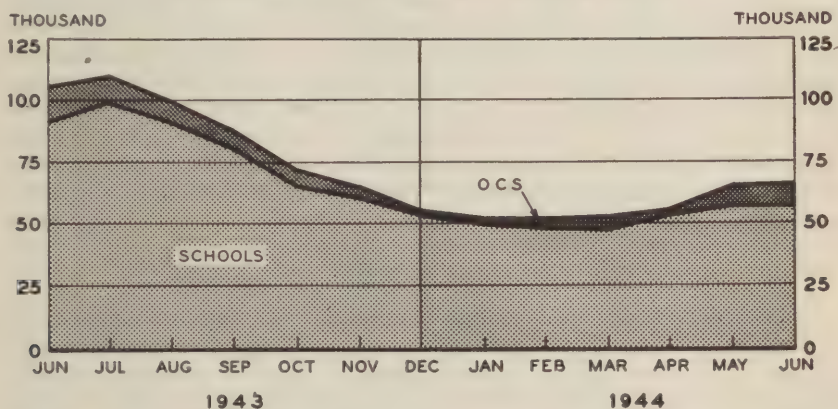
The Signal Corps continued to train a variety of specialists. Seven schools had a total capacity of 21,565 at the end of the fiscal year. Technical training courses ranged from 8 to 36 weeks. The Signal Corps Photographic Center provided special instruction for the personnel of photographic companies.

The Chemical Warfare Service provided training to military personnel on recognition of gases, protection from gas attack, and the treatment of gas wounds. Of 8,031 graduates from Edgewood Arsenal, 848 were Navy personnel, 643 were Marines, and 297 were Coast Guard. A west coast chemical warfare school was established at Camp Beale, Calif., in October 1943, and transferred to the Rocky Mountain Arsenal at Denver, Colo., in June 1944. The Transportation Corps established an officer's school at New Orleans, La., to provide training for various specialists, while the school at Camp Stoneman, Calif., was inactivated.

The Quartermaster Corps continued to offer most of its school training at Camp Lee, Va. Courses included a basic and advanced supply course for officers, and an advanced course for noncommissioned supply and administrative officers. Two war dog training centers were closed during the year. Advanced warehousing was taught at the Utah ASF depot. Engineer training continued especially active and school facilities were being used at about maximum capacity at the end of the year.

The Corps of Chaplains trained personnel at the Chaplains' School at Harvard University. The Army Exchange Service School was moved from Princeton University and combined with other special services and morale services training at Lexington, Va. This school also trained physical reconditioning officers and educational reconditioning officers and enlisted men. The Judge Advocate General's School added a 4 weeks' course on the legal aspects of contract termination.

CHART 71
STRENGTH OF ASF SCHOOLS



The Adjutant General's School provided new courses for WAC recruiters and for civilian personnel officers. The training activities of the Finance Department were consolidated at Fort Benjamin Harrison. The Army Finance School conducted added training on contract termination accounting and auditing, and civilian pay-roll administration. The Army Finance School also trained a limited number of civilians to replace military personnel.

The Provost Marshal General opened a new Security-Intelligence School at Chicago, Ill. Three-weeks' courses for officers at the Provost Marshal General's School at Camp Custer provided specialized training for officers.

The Army Service Forces continued to contract with civilian schools for the teaching of various specialties to officers and enlisted men of the Army. At these schools, prescribed courses were conducted by civilian instructors utilizing civilian facilities. The Transportation Corps made arrangements, for example, for three industrial plants to conduct courses on marine diesel engines. Railway operating person-

nel were trained in commercial railway shops and on the railroad. The University of Tulsa operated a petroleum school for the Quartermaster General.

The number of civilian schools was greatly reduced during the fiscal year 1944; 94 contracts covering 27,000 officers and enlisted men were in force on 1 July 1943 compared with 37 covering 2,800 officers and enlisted men on 30 June 1944. The Signal Corps, on 1 July 1943, was using 35 civilian schools; on 30 June 1944 only 10. A further reduction was planned during 1945. The use of civilian training facilities was confined to those having specialized technical or other expensive equipment, which it would be uneconomical for the Army to duplicate.

Officer Candidate Schools

Capacities of ASF officer candidate schools fluctuated greatly during the fiscal year 1944. On 1 July 1943 the combined authorized capacity, adjusted according to inflow rates set by the War Department, was 15,754; the figure declined to 3,059 on 31 December 1943, and then rose to 8,870 by 30 June 1944. The general decline in the number of graduates naturally resulted in a marked raising of standards both in the selection of candidates and in training.

Directives were issued to suspend operations at the Provost Marshal General and Chemical Warfare Service Officer Candidate Schools during the year, but these directives were rescinded before they became effective. The Army Administration and Adjutant General Officer Candidate Schools were discontinued during the year. The capacities of the various Army Service Forces officer candidate schools fluctuated as shown in the accompanying table.

Officer Candidate School Capacities, fiscal year 1944

	1 July 43	31 Dec. 43	30 June 44
Total	15, 754	3, 059	8, 870
Quartermaster	3, 200	125	1, 875
Engineer	2, 100	1, 000	2, 400
Signal	1, 000	350	1, 670
Medical Administration	3, 000	300	500
Ordnance	1, 800	200	1, 100
Army Administration	600	0	0
Chemical Warfare Service	300	134	100
Adjutant General	500	150	0
Provost Marshal General	500	175	50
Transportation Corps	750	250	750
Finance	600	100	100
Judge Advocate General	75	150	225
Women's Army Corps	1, 329	125	100

Training of officer candidates placed more emphasis on field training in order better to prepare newly commissioned officers to care for themselves and their men in the field. The Signal Corps and the Ordnance Department inaugurated plans to give graduates of officer candidate schools specialized officer training in existing officers' courses, in order that graduates might be better prepared to perform technical duties.

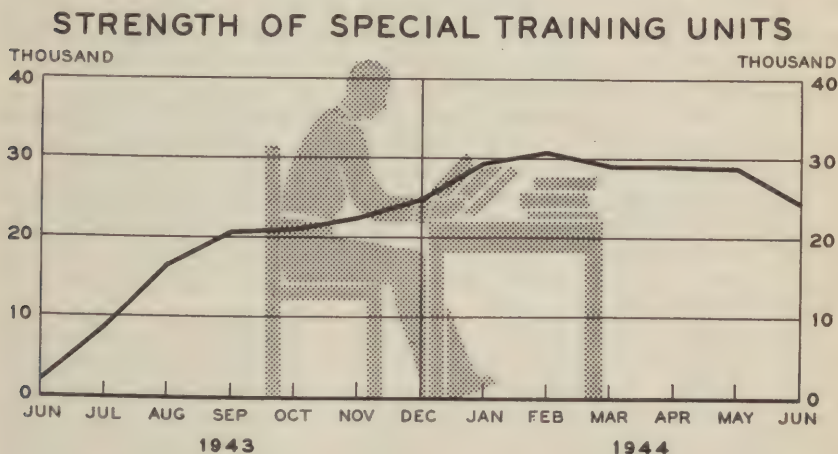
Schools operated for the War Department

Operation of the Command and General Staff School, Fort Leavenworth, Kans., and the United States Military Academy, West Point, N. Y., was continued by the Army Service Forces. Control of curricula and doctrine at these two schools was retained by the Assistant Chief of Staff, G-3, War Department General Staff. The Army Service Forces also conducted civil affairs training, previously described, under the direction of the Civil Affairs Division, War Department Special Staff.

Special Training Units

Special training units trained illiterates, non-English speaking soldiers, and men classified in grade V on the Army general classification test in academic and military subjects so that these handicapped individuals would be able to proceed with regular military training and perform useful military service. Prior to 1 June 1943 special training was conducted by the three major components, Army Ground Forces, Army Service Forces, and Army Air Forces, in units, in training centers, and even in combat divisions in the final stages of field training. Much of this literacy training was conducted at night and during off-duty hours. The necessity for stressing combat training made it difficult to maintain a continuous and effective program of literacy training.

CHART 72



On 1 June 1943 the Army Service Forces began to provide literacy training for all men before their assignment to AGF, ASF, or AAF installations. Special training units established at reception centers were in full operation by December 1943. Persons assigned to these units received 3 hours of academic training and 5 hours of military training daily. Three months of training was authorized; about 75 percent of the men completed special training in 60 days or less. Originally 24 special training units were established in the various service commands; by consolidation the number was reduced to 19. The average trainee strength of these reception center units increased

rapidly from 2,070 in June 1943 to a peak load of 30,666 in February 1944. From February to June 1944 there was a gradual decrease in the average trainee strength, resulting primarily from the decreased rate of induction of men into the Army.

About 12 percent of the men passing through reception centers in 1944 were assigned to special training units. Nearly 50 percent of all Negroes required special training, and 6 percent of all white inductees. Some 85 percent of white trainees successfully completed special training, compared with 88 percent of the Negroes.

The first year of operation of special training units at the reception center level demonstrated beyond doubt the practicability of special training for men of limited educational, mental, and language abilities. A total of 106,500 were salvaged and forwarded for regular training. This number of men was the equivalent of seven Army divisions, and represented a substantial contribution to the solution of the problems created by the shortage of manpower. Furthermore, this training was accomplished in a minimum time, rarely exceeding 3 months.

WAC Training

During 1944, 35,000 newly enlisted women received basic training in a WAC training center. In addition to basic training, 7,000 women received training in technical courses at WAC training centers.

The WAC Officer Candidate School, originally established at Fort Des Moines, Iowa, in 1942, was moved to the third WAC training center, Fort Oglethorpe, Ga., in September 1943. During the fiscal year 1944, 784 women were commissioned upon successful completion of the officer candidate course.

On 1 July 1943 six schools were being operated by The Adjutant General exclusively for WAC personnel to provide administrative training urgently needed to meet domestic and overseas requirements. These schools were closed when the inflow of recruits was reduced. All basic administrative training was thereafter provided by the clerks' courses at WAC training centers, and advanced administrative training for WAC personnel was conducted at the Adjutant General's School, Fort Washington, Md.

The decline in WAC enlistments during the early part of the fiscal year resulted in the deactivation of basic training centers at Fort Devens, Mass., and Daytona Beach, Fla., and the release of civilian facilities in Des Moines, Iowa, which had supplemented the facilities of Fort Des Moines. On 30 June 1944, two training centers, Fort Des Moines, with a capacity of 6,050 trainees, and Fort Oglethorpe, with capacity of 8,525 trainees, were in operation. Basic and technical training programs at the two training centers were similar in content. One special training unit to remedy educational deficiencies of enlisted women was maintained at Fort Des Moines.

Overseas replacement training was conducted at Fort Oglethorpe in a 2-weeks' course covering those processing and training functions normally performed by personnel replacement depots.

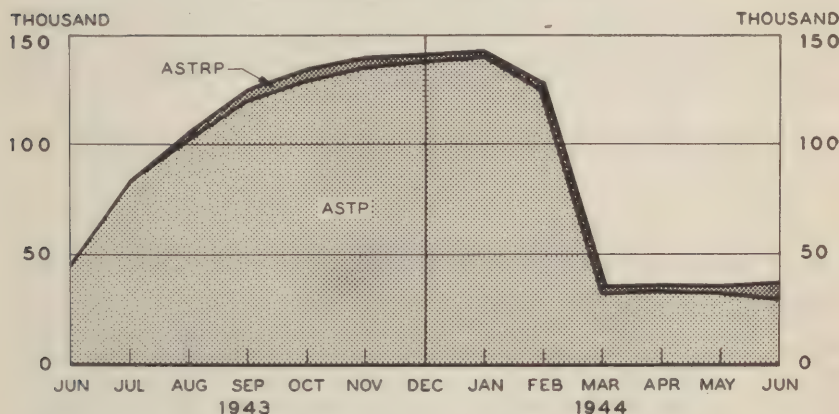
A program of concurrent training was conducted for 275 WAC detachments assigned to Army Service Forces installations in the Zone

of the Interior. Uniform training of all field detachments was insured by a program of 3 to 4 hours per week, which included physical training, drill, Army orientation, and review of essential basic subjects in addition to pertinent courses prescribed from time to time for Zone of the Interior overhead personnel.

Army Specialized Training Program

Established in the fiscal year 1943, the Army specialized training program was just getting well under way on 1 July 1943. The total number of students enrolled in the program on that date was 44,309. The colleges and universities to participate in the program had been mostly selected, the curricula determined, and the machinery for the assignment of enlisted men created. Educational institutions understood that they had full responsibility for all instruction, and that the Army through its local commandant exercised control over the trainees' discipline, military administration and training, and health.

CHART 73
STRENGTH OF ASTP



The second meeting of the Advisory Committee of the Army Specialized Training Program in July 1943, endorsed an earlier recommendation that trainees should not be permitted to engage in inter-collegiate athletics. This committee was originally set up in January 1943. At its third meeting the committee recommended that "all students of the ASTP, while in residence, be registered in the institution as regular students and be given academic credit in accordance with the rules and standards adopted by the institution with the understanding that these standards be those of the various accrediting agencies." The committee called attention again to the responsibility of the participating school for teaching the prescribed curricula and for the selection of qualified instructors. The committee added that "objectivity should be the keynote of all instruction."

Expansion of the ASTP in all categories continued until January 1944, when the peak strength of 141,953 students was attained.

The following table shows a comparison of enrollment by fields of study on 31 July 1943, 31 January 1944, and 30 June 1944:

Enrollment in the ASTP

	31 July 1943	31 Jan 1944	30 June 1944
Basic-----	13, 440	68, 347	0
Advanced engineering-----	3, 833	15, 810	2, 827
Area and language-----	1, 610	13, 357	1, 458
Personnel psychology-----	1, 018	219	0
Premedical, predental, preveterinary-----	0	796	3, 847
Advanced technical-----	633	902	0
USMA preparatory-----	0	719	0
Medical-----	3, 105	13, 736	14, 009
Dental-----	1, 576	5, 761	6, 152
Veterinary-----	825	1, 392	440
ROTC-----	0	5, 679	0
Reserves-----	0	2, 900	6, 641
STARS-----	18, 269	12, 331	0
	44, 309	141, 953	35, 374

On 3 December 1943 the War Department directed that, beginning 1 January 1944, the ASTP input into colleges would be limited to 3,000 trainees per month. The total enrollment in the program was to be reduced to 125,000 by 1 April 1944. On 18 February 1944 the Secretary of War publicly announced that a sharper curtailment of the ASTP would take place. All available men were needed to complete ground and service troop units destined for overseas.

As a result of the curtailment, 86,200 trainees were separated from ASTP and assigned as follows:

AGF-----	69, 000
ASF-----	16, 100
AAF-----	300
Others-----	800
	86, 200

The curtailment was completed by 1 April 1944, when the total strength of the program approximated 35,000.

Trainees separated from the program were reassigned with the greatest possible attention to their background and additional qualifications acquired from their specialized training. Priorities in assigning trainees were given to (1) candidates for officer candidate schools, (2) further training in ASF specialist schools to meet requirements of new T/O units, (3) preparation for assignment to units by training in noncommissioned officer schools, (4) assignments to low priority units.

During the fiscal year 1944 approximately 23,800 men graduated from the Army specialized training program. In addition, approximately 20,000 men were separated in March 1944, for the convenience of the Government as graduates during a final term of training.

As enrollments in the first half of the fiscal year approached the strength of 150,000 authorized for the program, admission requirements were gradually raised. At the outset of the program one requirement for admission was a minimum score of 110 on the Army general classification test. The minimum score was raised to 115 a few months after the program was in operation, and later was increased sharply for soldiers in specific categories of instruction requiring outstanding intelligence and aptitude.

It was emphasized from the beginning that curricula as well as eligibility requirements and administrative procedures would undergo

revision from time to time in conformity with the constantly changing demands of the various branches of service. New curricula were to be developed as demands arose, and curricula were to be modified or dropped in the light of the practical experience gained in their actual operation.

The general basic curriculum was revised on 1 February 1944, in order to clarify its objectives and to specify the means by which these objectives were to be achieved. On 1 April 1944 instruction in all basic phase curricula was terminated for men on active duty.

Advanced phase curricula were likewise modified with experience. The advance phase engineering instruction was revised in July 1943. Chemical, electrical, civil, mechanical, and sanitary engineering curricula were first published in the same month. Revisions were made in March 1944. Training in marine transportation was discontinued in December 1943, and in chemical engineering in April 1944. Special advanced curricula had to be prepared for some of the most highly qualified men coming into the foreign area and language course. Training in personnel psychology was discontinued in January 1944, when all demands had been met.

Physical training was an important part of the ASTP. Trainees spent 6 hours per week in various exercises and sports, designed to prevent physical deterioration and to alleviate the strain upon the nervous system which might result from prolonged and intensive academic study. A survey of results of physical conditioning during the first term of the ASTP in the fall of 1943 revealed an average improvement of 21 percent in physical efficiency. The survey was based on tests which covered endurance, muscular tone, strength, coordination, and speed.

Training at 27 schools of medicine, 19 schools of dentistry, and 6 schools of veterinary medicine was initiated in May and June 1943. By the end of July 1943 enlisted men in relatively large numbers were assigned to ASTP units at 74 contracting schools of medicine, 39 schools of dentistry, and 10 schools of veterinary medicine. During the year one additional unit was established for medical training. Instruction in dentistry was discontinued at one institution in view of certain curricular changes at the institution.

At the beginning of the program trainees assigned to medicine, dentistry, and veterinary medicine were selected from among the members of the Enlisted Reserve Corps who were then matriculating in accredited medical, dental, and veterinary schools, and from qualified civilian students in these schools upon their induction into the Army. Reservists and inductees alike were processed through reception centers and assigned immediately to the ASTP units at the schools in which they had matriculated. They were detailed for instruction in the institution and class in which they had been enrolled. They were thus assigned without interrupting their professional studies for basic military training. By September 1943 the number so assigned was as follows:

Medicine	13, 245
Dentistry	4, 925
Veterinary medicine	1, 399
	<hr/>
	19, 569

ASTP trainees graduated from the standard medical, dental, and veterinary curricula, were discharged from their enlisted status upon receipt of the appropriate professional degree and were appointed as officers in the Medical, Dental, or Veterinary Corps. All medical graduates were so appointed, but they were not ordered to active duty until they completed the prescribed 9 months hospital internship. Dental and veterinary graduates were appointed to fill immediate position vacancies. Because the losses among dental personnel in the Army were less than were anticipated, not all of the ASTP graduates were appointed in the Army. They were made available, however, for appointment in the Dental Corps of the Navy, the United States Public Health Service and the Veterans Administration.

Since the numbers of position vacancies in the Veterinary Corps were limited, Army training in this field was being discontinued on 30 June 1944. Trainees in the senior class were continued in the program until graduation; other trainees were granted the option of discharge from the military service for the purpose of continuing veterinary studies as civilians, or of transfer to other military duties.

Since the degree of doctor of medicine, dentistry, or veterinary medicine is prerequisite to appointment in the Medical, Dental, and Veterinary Corps, training in these fields must be directed to the end that those degrees will be granted. No changes have been made in these professional curricula. An accelerated program by which classes were admitted at 9-month intervals and matriculants graduated in 36 months had already been adopted by these schools. No change was necessary to accelerate the training of enlisted personnel.

Because the medical schools had agreed, as a contribution to the war effort, to admit men to their entering classes with 2, rather than 3 academic years of specific college preparation, little change was required in the premedical program. The course requirements in semester hours of these 2 academic years (64 weeks) could be satisfied by 5 terms (60 weeks) of intensive training under the ASTP, and such a schedule was adopted. This preprofessional curriculum included 2 terms of basic studies, undifferentiated from those prescribed for future engineer trainees, and 3 terms of specifically premedical courses.

The selection in term II or III, basic curriculum, of qualified acceptable candidates for the study of medicine and dentistry was made on a democratic basis without regard to financial status. There was great interest in this procedure, and satisfactory reports were received on the caliber of trainees so selected.

Typical assignments for graduates of the ASTP included graduates trained in organic chemistry and chemical engineering assigned to special engineering units; graduate technicians, including chemical engineers and chemists, assigned to duty in chemical warfare laboratory companies; chemists and chemical engineers for petroleum laboratory companies; personnel psychologists assigned to classification work in Adjutant General units; and graduates with unusual electrical engineering background assigned to Signal Corps units.

Soldiers who completed first-year advanced ROTC work at colleges during 1943, prior to entering active duty in the Army, were given training under the Army specialized training program preparatory

to entering officer candidate schools. The program for first-year advanced ROTC men began in September 1943, and was terminated at the end of February 1944. During this period 8,500 were trained. The academic instruction in this program was designed for maximum utility to the branch of service to which the ROTC man was assigned. Performance standards in academic instruction were identical with those of the Army specialized training program.

Preparatory courses for the United States Military Academy were organized in the summer of 1943. Units were established at three colleges to provide training for members of the Army who held letters of appointment, issued by the War Department, to the United States Military Academy. The United States Military Academy preparatory program consisted of two phases of instruction. The first phase consisted of two 12-week terms of training preparatory to the United States Military Academy entrance examinations. The second phase consisted of one 14-week term, largely on subjects prescribed in the first year of the United States Military Academy. Instruction in the first phase ended in March 1944, and instruction in the second phase ended in June 1944. A new class was to begin on 9 September 1944.

The Army Specialized Training Reserve Program

The AST Reserve program was begun on 9 August 1943, to provide training for qualified 17-year-old high-school graduates before they were called to active duty after they became 18.

The reserve program was designed to assure a flow of specially qualified young men into the Army and, in limited numbers, into advanced specialized training. It provided for uninterrupted training for qualified young men who might otherwise have lost valuable time between high-school graduation and entry into the Armed Forces on active duty. A maximum quota of 25,000 of these students at any one time was authorized in addition to the quota of 150,000 set for the number of ASTP soldiers at any one time.

Young men who were found qualified for the Reserve program were granted military scholarships under which they received academic instruction in ASTP courses at colleges and universities selected by the War Department. The scholarship covered payment by the Government of tuition, messing, housing, transportation, and such medical service as was customary at the institution.

In March 1944, with the shift of emphasis to the Reserve program, it was announced that the scholarship would also include Army clothing, the same medical care provided enlisted men on active duty, and appropriate shoulder insignia to distinguish the ASTRP student from the enlisted man on active duty.

On 29 April 1944, arrangements were completed for the training of members of the Air Corps Enlisted Reserve in the ASTRP, and the first ACER members were assigned to the ASTRP in June 1944. The college training program which had been operated by the Army Air Forces was discontinued on 30 June 1944.

Selection of the first AST Reserve program students was made from men who passed a test given in conjunction with the Navy on 2 April 1943. Besides passing the preinduction examination, candidates for the program were required to have completed their high school educa-

tion, be 17 years old but not yet 18, and to enlist voluntarily in the Enlisted Reserve Corps. A second test was given on 9 November 1943. A total of nearly 400,000 men took these first 2 tests.

The third Army-Navy college qualifying test was administered on 15 March to 167,110 men; 61,690 designated preference for the Army program and the balance designated a preference for the Navy program. Members of the latter group who were not entered in the Navy program were notified that they were eligible for the Army specialized training reserve program under the same conditions as those who had expressed a preference for Army training. The original ceiling of 25,000 which had been established for the ASTRP was increased to permit 60,000 man-years of training in the fiscal year 1945.

Those who took the 15 March 1944 examination were required to achieve a satisfactory score on that test and to meet the following additional requirements: (1) successful completion of high school by July 1944; (2) age not more than 17 years 9 months on 1 July 1944; and enlistment in the Enlisted Reserve Corps.

Those between 17½ and 17¾ years of age on 1 July 1944, were assured of at least 6 months academic training; those not over 17½ years old on 1 July 1944 were assured at least 9 months of academic training.

In the course of expansion of the AST Reserve Program, important revisions were made in policy and procedures. The ASTRP was concerned largely with the training of reservists before they were called to active duty, instead of with the training of enlisted men on active duty. With the basic phase of the ASTP discontinued as the result of the curtailment order, the curricula which had formerly been included in the basic phase were rewritten for use in the reserve program.

From August 1943 to February 1944, members of the enlisted reserve corps accepted for the ASTRP were assigned to the basic phase curriculum of the ASTP. When the Reserve Program was expanded, three new curricula were prepared for reservists, depending on the length of their training. All the introductory and basic curricula include courses in mathematics, physics, English, history, and geography. Some included chemistry, engineering, drawing, and biology. Students who completed one or more terms of college work before entering the ASTRP were assigned to the most advanced training for which they are qualified. Physical and military training were also provided in the ASTRP under the revised program. Prior to May 1944, military training was not included in the reserve program except at units established at ROTC colleges.

Including his physical and military training, a student spent from 51 to 54 hours per week on his training, depending upon the curriculum and term to which he was assigned.

Upon completion of their ASTRP training, reservists were called to active duty. Members of the enlisted reserve corps, unassigned, become available for any military assignment in the Army Ground Forces or the Army Service Forces. They received basic military training like any other soldier. Members of the Air Corps Enlisted Reserve were assigned to training in the Army Air Forces in accordance with classification made at the AAF Basic Training Center.

Varying numbers of enlisted reserve corps students, who are recommended during the second or third term of ASTRP, will be selected for ASTP training after completion of basic military training. Such recommendation is based upon their academic success, their character, and their interest in further college training. The number selected will depend upon vacancies existing in the ASTP. Enlisted Reserve Corps students who followed an introductory curriculum were not eligible for ASTP training, since instruction in the introductory curricula did not prepare them for the more advanced work of the Army specialized training program.

The number of colleges and universities participating in the ASTP rose from 12 at the start of the training in April 1943 to a peak of 227 in December 1943. The number was reduced to 132 by the end of the current fiscal year. At the time of the curtailment, educational institutions were retained in the AST Reserve program in accordance with the following priorities: (1) Military colleges; (2) ROTC schools; (3) non-ROTC colleges for men; and (4) non-ROTC coeducational institutions.

Total estimated costs of the Army specialized training program and the Reserve program in the fiscal year 1944 were \$132,560,000.

As of 1 April 1944, the annual average cost per trainee was estimated as follows for the various curricula: STAR, \$719; basic, \$919; advanced engineers, \$1,049; area and language, \$1,167; personnel psychology, \$1,065. For medical, dental and veterinary curricula, the average cost estimates were: Medical, \$1,798; dental, \$1,782; veterinary medicine, \$1,451. These figures included tuition, textbooks and materials, rations, and quarters.

Preinduction Training

On 1 July 1943, the main outlines of the ASF preinduction training program had been formulated, but the schools of the Nation had not developed extensive programs of training for prospective inductees. Preinduction training at the local and State level awaited a fuller statement of Army needs. During the summer, statements of Army needs for preinduction training in the area of practical physics, publicized in 1942, were supplemented by statements designed to present Army needs for preinduction training in areas common to all soldiers. These statements of Army needs were prepared in cooperation with the United States Office of Education. They were published in summary form in "Education for Victory" between November 1943 and January 1944.

Meanwhile, a series of bulletins designed to present Army needs in certain occupational specialties were prepared for the use of vocational schools. These were published in October 1943, in cooperation with the Vocational Division of the United States Office of Education. Other programs for special groups of prospective inductees were developed during the year and recommended to the schools. By the spring of 1944, the schools of the Nation had been informed about the major areas of Army needs for preinduction training.

Cooperation of civilian training agencies throughout the Nation in the preinduction training program recommended by the Army was wholehearted. Civilian schools made adjustments in their programs to meet Army needs.

Preinduction training programs recommended to civilian training agencies fell into two categories, in-school programs and out-of-school programs. For students in general high schools, preinduction training was stressed in the following fields: electricity, machines, shopwork, radio; automotive mechanics; driver education; army clerical procedures, radio code practice, English; mathematics; orientation to army life; background of the war, physical education, health, sanitation and first aid, and military map reading. A somewhat similar statement was published for students in vocational schools. Recommendations on preenlistment training for the WAC were transmitted to civilian schools and colleges in June 1944.

The out-of-school programs included part-time vocational courses, orientation meetings for prospective inductees, and the preinduction literacy program. Prospective inductees employed in industry were encouraged to take part-time preinduction courses in vocational schools. The cooperation of management and labor was obtained in the promotion of this program for men facing induction.

On the basis of available figures, it was estimated that enrollments of 16- and 17-year-old high-school students in preinduction training courses totalled 2,800,000. This was an over-all figure of enrollment, not of individual students. There were 1,333,000 boys 16 and 17 years old enrolled in secondary schools.

A program of community orientation meetings for prospective inductees was developed in the summer of 1943, in cooperation with the Office of Civilian Defense, Selective Service, the Navy Department, and the United States Office of Education. This program was piloted in the fall of 1943 in Milwaukee and Cleveland. The success of these meetings led to the launching of a Nation-wide program of orientation meetings sponsored by the Office of Civilian Defense. Army orientation films were released for use in this program. Local defense councils took the lead in most states in organizing meetings, which are conducted in accordance with suggestions made in a bulletin entitled, "Introduction to the Army." Reports from the field and the Office of Civilian Defense indicated that during the fiscal year 1944, 5,000 meetings were held in 48 states, with an estimated attendance of 850,000 persons, of whom over 50 percent were prospective inductees. These meetings contributed greatly to improving the adjustment of individuals from civilian to military life.

One means of acquainting educational leaders with Army training methods and their implications for preinduction training was to invite selected representatives to visit Army training installations. Initiated in cooperation with the United States Office of Education, a program of Army camp visits was scheduled in each of the service commands in August 1943. This program was so successful that it was extended throughout the year in order to provide opportunities for 5,000 leading educators to visit Army camps. In addition, special provisions were made for leaders of the American Federation of Labor and the Committee for Industrial Organization to visit Fort Knox in October and November 1943.

One difficulty met by civilian schools in carrying on preinduction training activities was a lack of adequate equipment. Accordingly, Army salvage was distributed to civilian schools offering preinduction training. Over 5,000 requests were received from schools during 1944.

Among the articles in most demand were complete airplanes, airplane motors, propellers, landing gears, engines, and instruments, and salvaged motors, differentials, transmissions, electrical equipment, industrial machines and miscellaneous materials. Without such equipment, preinduction training activities in many schools would have been seriously handicapped.

Surveys made among enlisted men indicated that all but a few enlisted men believed that preinduction training had helped them in their military training.

Training doctrine

All reports from overseas theaters indicated that the training doctrine under which ASF troops were trained was essentially sound and adequate. Few changes in basic doctrine were made during the year. Revision of existing doctrine was limited to that required to introduce improvements, to standardize instruction, and to remove obsolete doctrine. New doctrine promulgated was that required by production of new equipment and by tactical and technical trends developed in operations. Every effort was made to reduce the quantity while improving the quality of publications and training aids.

The problem of keeping training doctrine abreast of trends in combat and of new developments in matériel was of prime importance to adequate training. Reports received from various theaters were constantly studied and all appropriate changes in doctrine were incorporated in revisions of appropriate field and technical manuals. Technical manuals for new items of equipment were published and copies placed with each piece of equipment as it left the factory so that the operator would receive appropriate operation and maintenance instructions with the equipment.

To insure standardization of material in new manuals on equipment, a standard outline for this type of technical manuals was developed. This outline provided that manuals on new equipment should contain all essential information in a uniform arrangement, insuring adequate coverage in the most convenient and simplified form. An over-all program for producing radar training literature was developed to meet the needs of the Army Ground Forces, Army Air Forces, and the Navy, as well as of the ASF.

In December, following numerous reports from overseas theaters that troops in combat were not "supply conscious," all training personnel were directed to place additional emphasis on conservation and maintenance of equipment. Apart from these more or less obvious lines of improvement, analysis of the problem showed that other functions and attitudes involved in supply activities had a bearing on the situation. For example, it was necessary to develop in troops a sense of the importance of making supplies flow smoothly and swiftly to using organizations, by means of prompt transmission and follow-up of essential reports and requisitions in order that they might arrive when and where needed. The tendency to accumulate excess stocks locally as a safeguard to interrupted supply was combated. Another important point was training in managing of supplies to assure an adequate amount without overstocking.

Characteristic, also, of the close interrelation between training doctrine and overseas developments was the intensification of training

in malaria control and discipline. An ASF circular in December prescribed basic training in malaria control as a prerequisite to a unit's readiness for movement overseas. It was directed that a statement be included in training status reports on the number of personnel who had received training in malaria control and malaria discipline, and the date when the remainder would complete this training.



Visual Training Aid

The Quartermaster School, Camp Lee, Va. Miniature lay-out of supply installations in a theater of operations. Made by the Quartermaster School.

To provide current information to troops in training 683 new manuals were published and 36 were revised during the fiscal year. Technical bulletins were authorized as a medium for the chiefs of technical services to publish quickly and without formal review technical information as it developed. To provide War Department training doctrine for our allies, 407 manuals were translated into 13 foreign languages and 375 training films were translated into 5 languages. Publication of first edition technical and field manuals were permitted without formal concurrence from the other major commands. This arrangement reduced materially the over-all time required to prepare and publish training literature.

Training Aids

The Army Service Forces in 1944 continued and expanded the already extensive use made of the many types of audio-visual training aids. Over 100 new training films and more than 200 film strips were

released for use in teaching Army Service Forces subjects. A number of obsolete training films and film strips were withdrawn from circulation. By the end of the fiscal year, there were nearly 350 training films and over 450 film strips dealing with Army Service Forces subjects available for use in training. Training film production was drastically reduced during the last 6 months because of shortages in film stocks.

In order to increase the effectiveness of film strips, Instructor's references were published for a number of these training aids and a limited number of sound recordings of lectures to accompany certain film strips were prepared and distributed to film libraries. Seventy-five film bulletins dealing with new techniques and procedures developed as a result of a research or combat experience were released. In addition, a new series of combat bulletins was established. These films are designed to emphasize training lessons based on combat experience. Releases were made at intervals of approximately 3 weeks.

Graphic training aids were established as a new War Department training medium during the year. Graphic training aids included: graphic portfolios (a series of large size charts arranged in sequence for use by instructors in training groups in certain subjects); training charts (a graphic presentation of an operation or an article of equipment); chart series (a group of charts showing either different phases of one subject or a series of related subjects); and posters (which were used for reminder self-instruction in a subject that had already been taught). A new manual was released to provide a ready guide to graphic training aids, models, and other training devices available for distribution to training installations.

To insure more complete and effective utilization of training aids, a visual aid coordinator was assigned at most military establishments to run the film library and act as advisor to training officers in the use of audio-visual aids of all types. This step increased utilization as much as 50 percent in some categories. In addition, distribution of visual training aids upon a requisition basis materially increased their utilization.

Film-strip projectors were issued at battalion level to units both here and abroad. An allowance of 200 pounds of training aids was authorized each company or similar unit going overseas. A dummy round of ammunition was made an accessory to each crew-served weapon.

The supply of training ammunition and explosives was adequate during the fiscal year. There were temporary shortages of a few items which did not seriously interfere with prescribed training. War Department authority was granted to the commanding generals of the major commands to establish allowances for individuals and units under their control.

At the beginning of the fiscal year procedures were established to control the scheduling of training inspections to be made by representatives of the Director of Military Training, the technical services, and the various staff divisions concerned. These procedures provided coordination and prevented duplication of inspection efforts and assured the scheduling of inspections at suitable intervals so as to provide periodic coverage of all training activities and yet avoid undue harassment. The training agencies concerned were directed to

conduct inspections whenever warranted by special circumstances and were also required to inspect all units committed for overseas movement. As a result Headquarters, ASF, was furnished with timely information regarding training progress, and inspection efforts were directed to accomplish the most beneficial results.

Army Service Forces training conferences were conducted at Camp Lee, Va., in October 1943 and at Fort Monmouth, N. J., in March 1944. The directors of military training of the service commands, technical services, and ASF staff divisions having training functions met in sessions with key officers of the Military Training Division and the Army Specialized Training Division to discuss current problems. Full advantage was taken of facilities available at these installations to observe techniques in Quartermaster and Signal Corps training.

In May 1944 a conference was conducted at the Medical Supply Services School, St. Louis, Mo., to acquaint directors of military training and directors of military personnel of the service commands, technical services, and staff divisions, and commanding officers of Army Service Forces training centers with the details of the 1944 ASF training plan.

Chapter 18. MANAGEMENT

The most important single problem confronting the Army Service Forces throughout 1944 in the performance of its many responsibilities was manpower. The personnel available to do the operating work of the ASF (as distinguished from troops in training for overseas service) was more and more difficult to obtain. At the same time the rapid expansion which had occurred between 1940 and 1943 suggested that considerable economies were possible in the better utilization of the personnel already recruited or assigned to the ASF.

A comprehensive and simplified scheme of personnel control was adopted at the end of the fiscal year 1943 to become effective on 31 August 1943. The immediate goal at that time was a reduction of 105,000 in total operating personnel by December 31. From a total of 1,542,000 operating personnel on 1 July 1943 the Army Service Forces were successful in reducing its total operating personnel by 220,000 by 31 December.

The reduction in operating personnel achieved during the second 6 months of the fiscal year was less notable. The low point in ASF operating personnel occurred in March 1944, when the total was reduced to 1,290,000 persons. By the end of the fiscal year, however, operating personnel had increased to 1,308,000, only 4,000 less than the number employed on 31 December 1943.

The reduction in military personnel represented a proportionately greater decline than for civilian personnel. From 546,000 officers and enlisted men on 1 July 1943, the Army Service Forces reduced its military operating personnel to 440,000 by 30 June 1944. Civilian personnel declined from 996,000 to 868,000 by the end of the year. Civilians continued to number more than 60 percent of all those engaged upon the work of the ASF in the United States.

The personnel control system which became effective on 31 August 1943 proved entirely feasible in operation. Chiefs of technical services and commanding generals of service commands were made responsible for allotting personnel to their subordinate field installations. The system of lump sum authorizations permitted adjustments within the total available personnel at the discretion of each level of command. Throughout the year actual personnel strength continued to be somewhat less than ASF personnel authorizations.

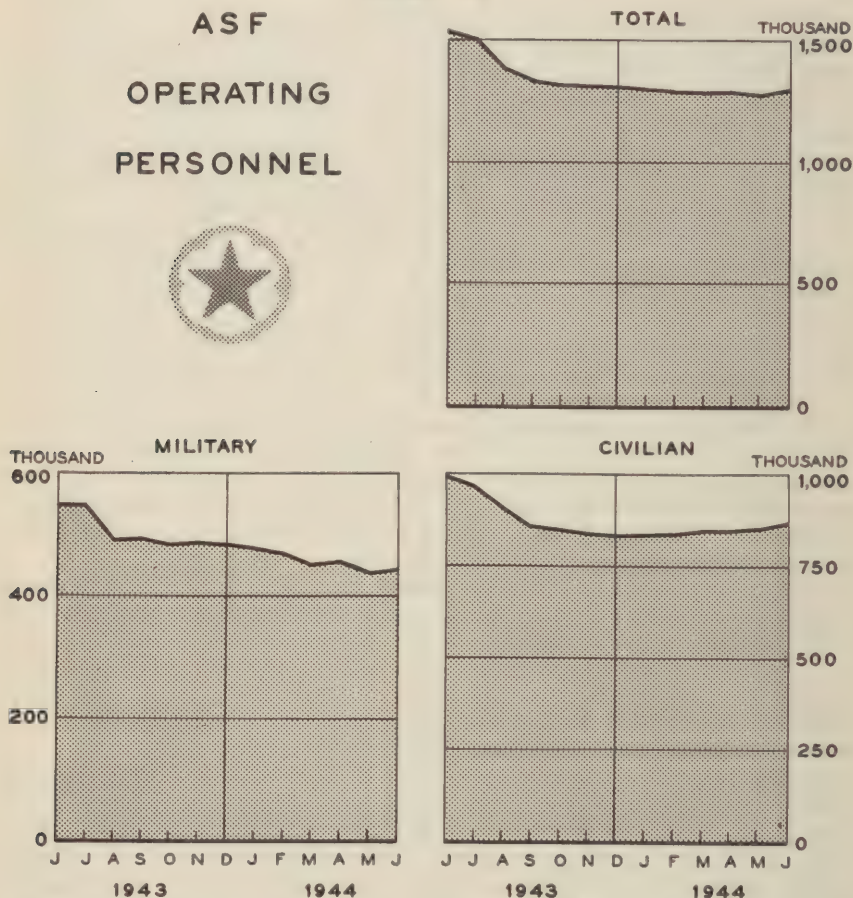
Total operating personnel subject to authorization remained about 150,000 less than total operating personnel. As of the end of the year personnel authorizations totalled 1,159,000 persons of whom 566,000 were to technical services, 556,000 to service commands, and 33,000 to staff divisions of the ASF.

At the same time that operating personnel was declining, the work load of the Army Service Forces was increasing. With January 1944 as 100, the work load index during the fiscal year 1944 increased from

89 in July 1943 to 110 in June 1944. This index was based upon 21 different activities of the Army Service Forces such as procurement, storage, cargo shipped overseas, troops shipped overseas, military construction, maintenance operations, supply and service at posts, induction of enlisted men into the Army, prisoners of war, financial payments, and general hospital services. These activities were individually weighted by the proportion of total ASF operating personnel engaged upon each.

CHART 74

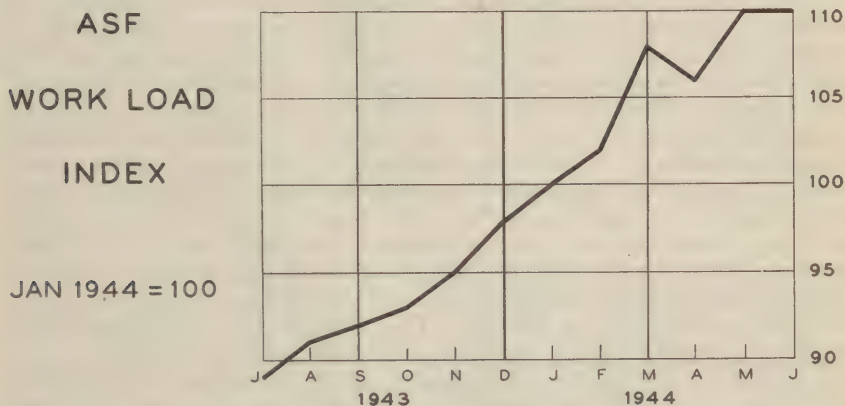
ASF
OPERATING
PERSONNEL



The personnel adjustments necessary in order to handle the job of the ASF were many. As military personnel was reduced, increased attention was given to obtaining civilian personnel. This was not always easy to do. As an example, the problem of maintenance shops may be cited. At Army posts throughout the United States more and more civilian laborers were used rather than military personnel. The location of these shops on Army posts, however, made transportation a major problem in obtaining adequate personnel. Wage rates offered were often lower than those paid in nearby industrial centers. The induction of skilled mechanics into the armed forces, moreover,

reduced further the available supply of civilian labor. To overcome such difficulties, all repair shops used extensive recruitment programs and on-the-job training. Shop facilities and load had to be increased and decreased with changing circumstances in the labor market. Prisoners of war were used to the fullest possible extent. These and other adjustments were not sufficient to prevent the accumulation of a sizable maintenance backlog by the end of the year.

CHART 75



The release of military personnel created shortages in instructors at training centers. For example, in February 1944 it became necessary to obtain more than 3,000 civilian instructors in order to continue the literacy training program for special training units. A call was issued through the press for both male and female teachers to apply to the appropriate service commands for teaching work at the 19 reception centers having special training units.

The increases in such jobs as the settlement of terminated contracts, the work load of general hospitals, and other jobs were offset as far as possible by decreases in other activities. A decrease in internal security inspections made personnel available for other work. As posts were inactivated, further personnel shifts could be made. Another step was to abandon, where this had not already been done, various table of organization units for service within the United States. This action was taken in order to achieve overhead economies, since organized units called for administrative personnel which were not needed in each case at fixed installations within this country. One administrative overhead at a post with detachments to serve in warehouses, repair shops, hospitals, and as prisoner of war guards proved administratively much more economical than the use of fixed troop organizations.

Every possible adjustment was stressed in an effort to meet manpower difficulties.

MILITARY PERSONNEL

Assignment Machinery

At the beginning of the fiscal year it became evident that deficiencies in the personnel assignment machinery of the ASF were interfering

with training responsibilities. A large portion of the units trained by the ASF for overseas use were declared not ready for shipment upon inspection because of a failure of the units to receive personnel in time complete their training. In part, the fault had resulted from poor planning to meet overseas troop needs. In part, also, it resulted from the lack of a basic plan for programming and scheduling the flow of available personnel to meet troop unit requirements. The length of time required to process men from one assignment to another further interfered with the strength of troop units.

The first of these deficiencies, the planning of training needs in relation to personnel assignment, was met in the autumn of 1943 when a plan was adopted which closely related personnel assignments to scheduled training. From data supplied by the General Staff the Army Service Forces were able to anticipate loss replacement needs 6 months in advance. The needs of domestic installations and units were also reviewed. A detailed estimate of personnel needs by occupational specialties was drawn up. On the basis of this information, induction needs were estimated. Personnel not qualified for overseas duty were assigned to the work of the ASF inside the United States. Whether destined for troop units or operating jobs in the United States, all personnel of the ASF went from reception centers to replacement training centers. The inauguration of preactivation training in ASF training centers has already been mentioned.

Careful inquiry in the third quarter of the fiscal year revealed that the entire personnel assignment machinery for the ASF was still cumbersome. This assignment machinery had 2 primary phases. Personnel made available to the Army Service Forces at reception centers might be used to meet either the training program of the ASF or needs for operating personnel. The bulk of the military personnel was intended for eventual use in troop units scheduled to go overseas. Considerable time was still taken in processing personnel. It was found that only 22 percent of inductees at reception centers were released in less than 5 days. Many were held over 10 days. At reassignment centers men were being held from 2 to 3 weeks. In March nearly 19,000 trainees who had completed their training at replacement training centers were being held awaiting assignment.

A major difficulty was the complexity of assignment machinery. Within the ASF alone there were 4,500 different activities and installations between which men might be assigned. The Adjutant General's Office as a staff agency of the ASF was receiving personnel status reports from 1,900 separate agencies. On the basis of these reports adjustments were being made in shortages and overages. The Adjutant General's Office was specifying assignments for individuals under ASF control at the rate of 500,000 a year. Assignment orders disposed of men in twos and threes. The average order transferring personnel covered 21 men. The instructions on personnel assignment covered more than 350 pages.

A new system of personnel assignment was devised whereby service commands and ASF training centers were made responsible for the assignment of ASF personnel. Each unit activated by the ASF for training preparatory to overseas use was assigned to a training center for the supply of its personnel. These units reported overages and shortages in personnel to a training center which was then responsible

for relieving excesses and making up shortages. By 30 June 1944 virtually all shortages in T/O units were eliminated. Commanding generals of service commands were made responsible for the assignment of personnel to overhead installations within their command. The length of time in which they might make adjustments was increased. Chiefs of technical services continued to be responsible for shifting all operating personnel assigned to their activities. Overages and shortages were then reported to The Adjutant General.

In this way the number of field installations reporting to The Adjutant General's Office was reduced from 1,900 to 36. The number of types of installations from which men might be received was reduced from 65 to 37, and the number of types to which they might be sent reduced from 65 to 37. This decentralization in assignment machinery affected primarily the supply of personnel to units in training. At the same time it enabled service commands and technical services to make more prompt adjustments in their operating personnel, since the time required to affect assignments was greatly reduced.

Release of Enlisted Men for Overseas Assignment

The increasing difficulty in obtaining physically qualified men through induction for assignment to units going overseas compelled the Army Service Forces to reduce its own military operating personnel drastically. In November 1943 the Army Service Forces directed all enlisted personnel released as a result of reductions in overhead or replacement by WACs and civilians were to be reassigned on the basis of physical standards to units earmarked for overseas service. In January, in accordance with War Department instructions, the ASF issued orders requiring the release for overseas duty of all men under 35 years of age who had served in the Army for 12 months and had the necessary physical qualifications. The only personnel exempt from these orders were those men who had served overseas at any time since 1 December 1941, and certain specialists whose reassignment might be postponed.

In the first 2 months the progress in reassignment of enlisted men was fairly slow. On 31 March there were 136,000 enlisted men physically qualified for overseas service remaining in ASF operating jobs. By 30 June 1944, however, 125,381 enlisted men qualified for overseas assignment had been assigned to units in training or actually sent overseas. Only 51,707 men remained to be reassigned. From 42 percent in February 1944, the operating enlisted personnel of the ASF qualified for overseas assignment was reduced to 16 percent in June. The various commands of the Army Service Forces were given until 31 October to release this remaining number.

Enlisted military operating personnel within the Army Service Forces thereafter was to be made up of men returned from overseas, men over 35 years of age, or men not physically qualified for overseas duties.

Officer Personnel

In accordance with War Department instructions, the Army Service Forces ceased, during the fiscal year 1944, to recruit officers from civilian life except for very special categories. Officer needs were

met by transfer within the ASF or from the ground forces and the air forces.

A survey of officer assignments in service commands during January 1944 revealed that 90.7 percent was suitably assigned. Of the remainder, only 4.2 percent was definitely malassigned. If an officer possessed substantially more or less skill and experience than a position required, or if he possessed a skill which he was not using and was needed elsewhere, he was classified as malassigned. By 1 April the percentage of malassignments had declined to 2.8 percent.

A similar survey undertaken among officers in ASF headquarters in Washington showed that in November 1943, 9.6 percent of all officers was malassigned and 14.6 percent had fair assignments. By February malassignment had been reduced to 2.2 percent of all officers and the fair assignments to 2.8 percent.

In addition to the minimum time periods prescribed by the War Department for officer promotions, the Army Service Forces during the fiscal year set up an additional measure which was called "the current trend." Under normal conditions officers remained in grade considerably longer than the minimum periods prescribed by the War Department. In July 1943 the ASF declared that the promotion of officers at a rate faster than that prevailing throughout the Army could be "justified only in the most exceptional circumstances."

Uniform application of promotion policy was obtained in the Army Service Forces by promotion boards created within each service command and technical service. Recommendations for promotion to the rank of lieutenant colonel and colonel were further reviewed in ASF Headquarters. In February 1944 an analysis of current trends in promotion indicated that promotions to the rank of major usually followed a 12-month period in the next lower grade; to lieutenant colonel a 14-month period; and to colonel, a 22-month period. In April 34 percent of all the promotion recommendations submitted to ASF headquarters was disapproved; the proportion was 31 percent in May and 33 percent in June. Approved recommendations in turn were submitted to the Secretary of War's Personnel Board.

Reduction in overhead authorizations, elimination of assignments, and other reasons made some officers surplus to the needs of the ASF. In December the War Department directed that officers who were surplus and for whom no suitable position existed might be relieved from active duty. In January the age limit was reduced to 38. Final action upon relief of officers remained with the War Department Separations Board. From February through June 1944, 1,317 officers in the ASF were relieved from active duty because no suitable assignment was available.

A problem in the assignment of WAC officers became evident by February 1944. About 1,000 officers lacked permanent assignments. Over 600 were held in pools at WAC training centers. The remainder were on temporary assignment throughout the ASF. To meet this situation a number of steps were taken. All distinctions in the personnel control system between WAC and male officers were eliminated. Limitations were placed upon the number of WAC officers on temporary duty. To provide permanent assignments, service commands and technical services were given a quota of WAC officers to absorb within their officer ceilings. In 2½ months over 800 WAC officers

were permanently assigned and another 400 were requisitioned by technical services and service commands. By the end of the year the entire problem of the assignment of surplus WAC officers within the Army Service Forces was eliminated.

Absence Without Leave

Although not an acute problem from the standpoint of numbers involved, the Army Service Forces watched carefully over absence without leave among all its personnel. During the fiscal year 1944 the AWOL rate in the ASF paralleled that of the Army Ground Forces fairly closely. In June 1944, the AWOL rate per 1,000 strength was 8.2 percent. Among nonoperating personnel, including units in training and units passing through staging areas, the AWOL rate was somewhat higher. Data on absence without leave suggested that there was a definite relationship between numbers absent without leave and intelligence. The highest rates were in special training units which included men with the lowest intelligence ratings in the Army general classification test. An analysis of types of personnel and commands with high rates of absence without leave indicated where particular corrective action was needed.

Morale Program

From the point of view of the Army as a whole, morale services were conceived from the beginning largely in terms of combat morale. The various phases of the program, both informational and recreational, were aimed largely at the soldier in combat or preparing for combat. This emphasis was of small usefulness to the soldier working for the Army Service Forces in the zone of the interior.

On 1 April 1944, a morale program section was set up in headquarters, Army Service Forces, to develop and direct a program of morale building activities specifically designed to meet the needs of ASF military personnel. This program was intended to show the soldier in the zone of the interior the importance of his own work in supporting battle lines on many different fronts. The close integration of the multifarious activities of the ASF, and how all of these flowed into the equipping and training of troops for a given operation, were shown in considerable detail. At the beginning, this program called for brief instruction over a 3 weeks' period.

By the end of the fiscal year a more comprehensive program had been developed to cover a 26 weeks' period. Post commanders and other officers were expected to make adjustments in the program to meet their own particular needs and to amplify it with materials and ideas of their own. Service commanders were made responsible for distributing the morale building program to all ASF installations in the field.

CIVILIAN PERSONNEL

Not only did the Army Service Forces endeavor to replace military personnel with civilian personnel, but also it endeavored to replace personnel qualified for military duty with other civilian labor. In particular, the number of women and the number of minority racial groups employed were increased. By 30 June 1944 more than 45 percent of all civilian employees, or 396,600, were women. Field

installations and headquarters offices also employed 118,500 Negroes. By the end of the fiscal year it was estimated that more than 188,000 young men and women employed at one time by the Army Service Forces had entered some branch of the armed forces of the United States. At the end of the year the ASF was eager to employ those who were discharged from military service.

Civilian Personnel Administration

During the fiscal year 1944 civilian personnel administration was further improved by refining techniques and by more carefully defining responsibilities. By constant emphasis upon the responsibilities of supervisors themselves for the day-to-day job of training, placing, and guiding employees, personnel work was lifted from a matter of paper routine and made to function in its proper role. The relationship between personnel offices at various levels of command were carefully defined so that each performed the tasks appropriate to its level.

Within the limits of law and Federal Regulations, the responsibilities for personnel operations were delegated to the commanding officer of each ASF installation. The job of insuring that this commanding officer functioned effectively as manager of civilian employees rested with the commanding general of a service command or with the chief of a technical service. By the close of the fiscal year all levels of command had staffs of trained officials responsible for providing advice and assistance in carrying out the civilian personnel program.

Surveys of personnel administration at various installations revealed two common failings. The first was a lack of competent civilian personnel administrators and the second was the lack of adequate emphasis upon in-service placement and employee evaluation. To meet the first deficiency, a school for training civilian personnel administrators was established at Fort Washington, Md. By the end of the fiscal year officers and civilians serving installations employing about 200,000 civilians had received an intensive 2-week training course which covered all the important phases of civilian personnel management in the ASF. As rapidly as one group completed the course, a new group began. By 31 December 1944, more than 500 personnel officials will have received this training.

In the anxiety to build up and maintain personnel strength, most installations placed their emphasis upon recruitment of civilian personnel. The goal was to provide necessary people in desired quantities. Little was done after the initial hiring to insure that full advantage was taken of the latent qualifications of those employed. Except for an annual rating of graded employees required by the Civil Service Commission, no regular provision was made for the periodic checking of employee performance. Informal evaluations made by supervisors were not known to personnel officers. In an attempt to remedy these deficiencies a program for better placement and evaluation practices was launched during the spring of 1944. Conferences were originally held with personnel representatives of technical services and service commands. Other conferences followed within the individual services and commands. Personnel technicians were provided with material for acquainting supervisors with their

responsibilities for good placement and evaluation practices. Training machinery was also set up to insure that each supervisor was aware of what was expected of him. This method of attack on the problem proved to be successful.

One important gap in the personnel policies of the Army Service Forces was the lack of a uniform procedure for the consideration of worker grievances. The basic policy had been set forth as early as August 1942, but there was considerable variation in the execution of these policies at several thousand installations. A uniform grievance procedure for the ASF was published at the end of the fiscal year.

Standardized procedures in personnel administration were achieved during the year by the issuance of a personnel administration manual. Unnecessary steps of procedure and many forms were consolidated and simplified in the performance of such transactions as initial employment, reassignment, promotion, payment, separation, and other changes in employee status. This manual was adopted as standard for the entire War Department and more than 30,000 copies were distributed to department and field offices.

Recruitment Programs

Throughout the country special attention had to be given to recruitment measures in obtaining necessary civilian workers. In order to meet the demands for civilian workers in Washington, a joint recruiting program was set up by The Adjutant General and the Civil Service Commission in October 1943. Army officers and civilians were trained in recruiting techniques and examining procedures by the Civil Service Commission and were authorized to appoint stenographers, typists, and clerks upon recruitment outside the District of Columbia. These recruits were given some training in the service command and then transferred to Washington. In Washington the War Department arranged for living accommodations for the new employees.

This recruiting program was so successful that another joint recruiting agreement was made with the Civil Service Commission at the end of January 1944. Beginning 15 April 1944, recruits appointed in the field came directly to Washington without initial training at a local installation. Of some 3,500 persons appointed during the second recruiting drive, only 279 failed to report in Washington. Total vacancies, most of which were created by resignations and retirements, numbered 3,700.

Morale programs of many different types were undertaken throughout the Army Service Forces as a service to civilian employees. Profits from recreational activities were used as an emergency fund to provide small loans to employees before they received their first checks or when other unusual circumstances arose. Trained welfare workers visited employees when they were ill and made certain that appropriate health services were being used. Employed mothers were provided assistance in finding nursery schools for their children during working hours. Trained counsellors offered advice and assistance in meeting work and off-work problems of employees. Employees were encouraged to organize recreational activities including bowling, tennis, swimming, picnics, and group singing. Employees

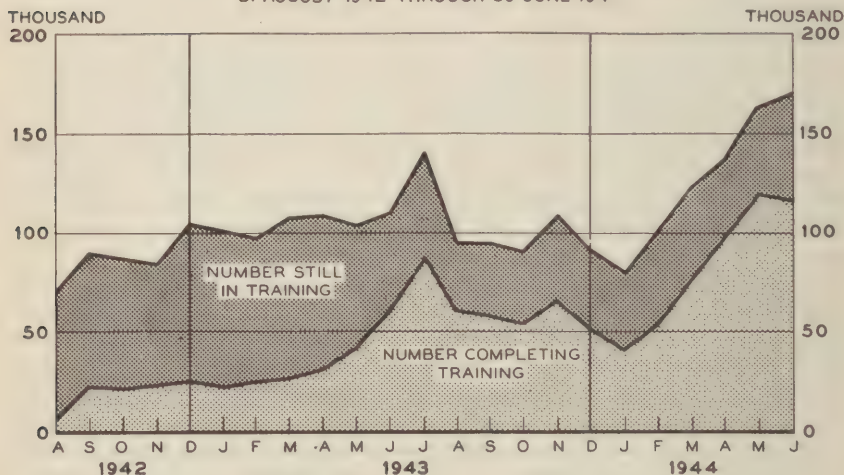
were also urged to use the facilities of churches, the USO, and other community organizations. Particular effort was made to reduce turn-over by interviews with employees before they had definitely decided to resign or to transfer.

CHART 76

PROGRESS OF TRAINING

ASF CIVILIAN PERSONNEL

31 AUGUST 1942 THROUGH 30 JUNE 1944



Civilian Training

During the fiscal year 1944 the tempo of the civilian training program was stepped up, while its methods and objectives were substantially unaltered. General training was ruled out. Men and women were trained for specific tasks requiring specific skills. While it took many months to train an adequate automotive mechanic, a carburetor mechanic could be trained in a few weeks. This type of training required careful production planning in addition to precise analysis of jobs. Training courses were then designed to meet the specific needs of single operations. Carefully planned training schedules anticipated training needs sufficiently in advance to insure avoidance of production bottlenecks. Training was given in public and private schools, in colleges and universities, as well as at War Department schools. The greatest proportion of training, however, took place on the job in shops and offices.

Every available kind of facility was used to get the training job done. Schools were set up in Washington where field employees were trained, and departmental employees were sent to field installations. The extensive use of IBM equipment, for example, necessitated the creation of a school in the Pentagon equipped to handle 71 trainees at a time, teaching them the simplest operations as well as the complicated techniques of wiring and maintenance. Training was given in as widely different areas as the operation of laundry equipment, handling of explosives, lens grinding, refrigeration engineering, occu-

pational therapy, machine maintenance, and contract renegotiation and termination.

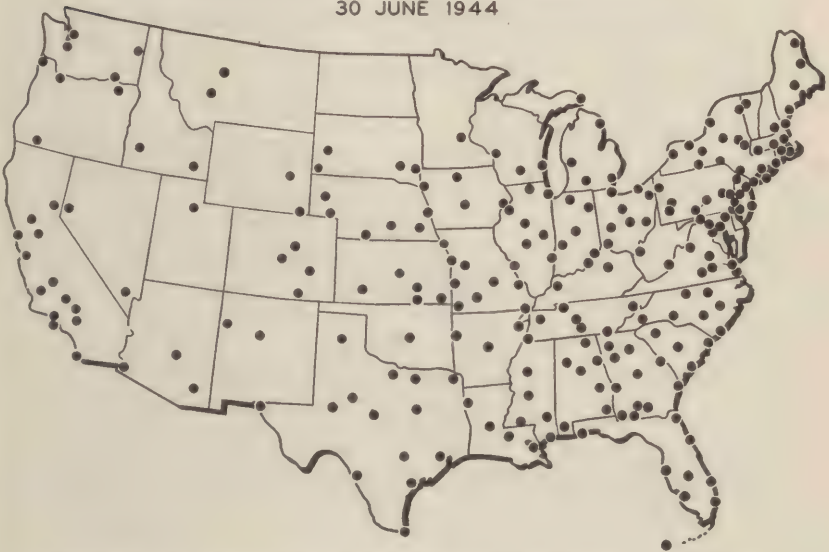
Thousands of workers added to the pay rolls each week had to be oriented in their jobs. Initial instruction helped the new employee to a right start and to understand the importance of his job in the performance of the ASF mission. Orientation played a large part in reducing turn-over, absenteeism, and accidents among new employees.

Training in safety security and health was given each month to 20,000 employees in the ASF in order to reduce loss of manpower through ill health and accidents. Throughout the Nation some 380 million man-days were lost each year from accidents, 85 percent of which resulted from human failure, carelessness, or lack of understanding of work hazards.

CHART 77

ASF LOCALITY WAGE SURVEYS

30 JUNE 1944



● REPRESENTS LOCALITY IN WHICH A WAGE SURVEY HAS BEEN CONDUCTED AND FOR WHICH A RATE SCHEDULE HAS BEEN APPROVED.

Special emphasis was given to supervisory training. Many men and women who previously had not had positions of responsibility were moved into these jobs. By 30 June 1944, the ASF had enrolled more than 107,000 persons in job instructor training. Over 76,000 persons had taken job-relations training. Job-methods training was also given to civilian employees as a means of promoting simplification of thousands of small jobs. The Quartermaster General estimated savings of more than 1 million dollars from simplified methods of performing small jobs.

Wage and Salary Administration

Machinery for wage and salary administration within the ASF had been created prior to 1 July 1943. During the past year additional

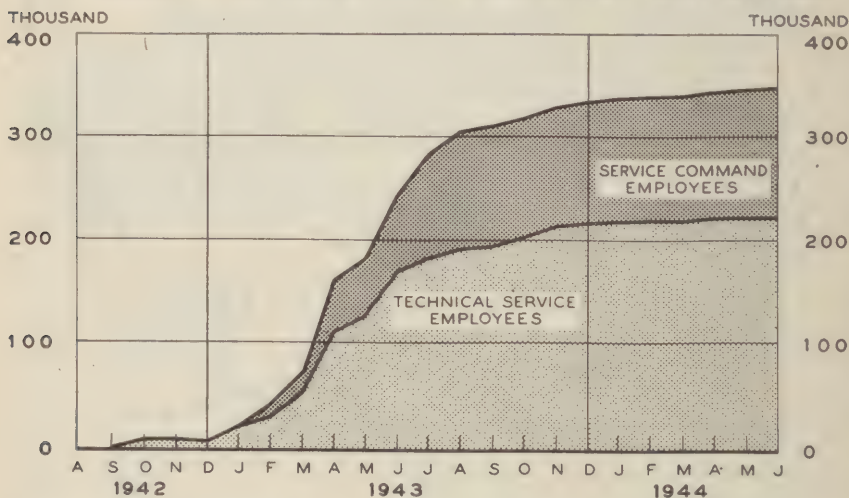
improvements were introduced through the training of classification analysts and the issuance of new check lists and guides. Uniform and equitable wages for hundreds of thousands of ASF workers not under the Federal classification law were finally realized in the spring of 1944, almost 2 years from the date when the first experimental studies were begun.

During that 2-week period a system of job analysis and evaluation together with the technique for releasing jobs to prevailing rates in the local labor market was created and applied to all installations where ungraded workers were employed.

During the fiscal year the number of employees covered by the ASF wage program grew from 240,000 to 340,000. A beginning was also made in providing uniform wages for workers at Army post exchanges.

CHART 78

NUMBER OF PERSONS COVERED BY ASF WAGE PROGRAM FOR UNGRADED EMPLOYEES



Incentive Programs

At the suggestion of the Army Service Forces a program to recognize the loyalty of civilian employees as well as individual cases of merit was adopted by the War Department. On 8 December 1943, hundreds of thousands of civilian workers in the ASF who had rendered satisfactory service for 6 months or more were awarded the emblem for civilian service. In addition, the commanding general conferred the Emblem for Meritorious Civilian Service upon 172 civilians, while upon his recommendation the Secretary of War conferred the Emblem for Exceptional Civilian Service upon 45 civilians.

The employee suggestion system inaugurated at the beginning of the fiscal year not only benefited workers' morale but contributed tangible savings to the war effort. During the first quarter the system was placed in operation at all War Department installations. Local commanding officers were authorized to make awards up to \$250, while

additional cash awards for suggestions with wide applicability had to be approved by the War Department Board of Civilian Awards. By 30 June 1944, approximately 100,000 suggestions had been received from ASF workers, of which close to 10 percent were adopted. Cash awards amounting to \$177,000 were paid to civilians while the estimated savings from approved proposals of civilians amounted to nearly 6 million dollars through 30 June 1944. In the next fiscal year the savings were expected to total 25 million dollars.

The first victory suggestion award carrying a cash prize of \$1,000 was awarded by the War Department to a civilian employee of the Transportation Corps. This employee suggested double-deck loading of boxed guns with appropriate methods for bracing and lashing. On one shipment alone this new practice saved the Government \$7,000 in freight charges and required only half as many flat cars. In 1 year the total savings from this suggestion were estimated at more than a million dollars.

EFFECTIVE UTILIZATION OF PERSONNEL

The ASF launched a major attack intended to bring about more effective utilization of personnel in March 1943. This particular program was completed early in the fiscal year 1944. As one phase, 4,255 different recommendations were received in ASF headquarters from field installations, service commands, and technical services. Of these recommendations, 1,505 proposed the elimination of nonessential records, 1,282 suggested elimination of nonessential activities, 1,156 requested decentralization of authority to act in the field, and 312 pointed to duplications in functions. Some 2,500 recommendations came from service commands and nearly 1,500 from technical services. Altogether, 3,547 recommendations were acted upon, of which 1,900 were approved. The approved recommendations included 891 involving nonessential activities, 682 involving nonessential records, and 457 involving requests for decentralization of authority.

For example, authority was decentralized to service commanders for approval of burial contracts in excess of \$85 for members of the armed forces. This authority had previously been vested in the Quartermaster General. The release of classified information from local headquarters was decentralized to service commanders. Among the nonessential activities eliminated were the monthly inventories of army exchanges. On inventory every 3 months was made mandatory thereafter. For some time it had been a general practice at field installations to send out confirmation copies of telegrams and teletypewriter messages. This practice was eliminated as a nonessential activity.

The wide-scale request for recommendations from field installations for elimination of nonessential activities was merely a beginning of the ASF program for the better utilization of personnel. All improvements in organization and procedures were intended to increase ASF output of supplies and services or to bring about decreasing requirements for personnel.

Work Simplification

A large-scale work simplification program was inaugurated by the Army Service Forces in January 1943, as one means of improving

personnel utilization, as well as the utilization of office facilities. The first phase of this program was designed primarily to reduce manpower needs in handling routine clerical jobs.

In October 1943, a second phase of the program was launched applying work-simplification techniques to materials handling. Extensive experiments were conducted at the New York Port of Embarkation and at the Jersey City Depot which indicated the possibility of substantial savings in materials handling. The results of these experiments were reported in a manual on work simplification in materials handling. Over 8,000 copies of this manual had been distributed by the end of the fiscal year. In order to train selected personnel in the savings that were possible from the work-simplification techniques, the Army Service Forces conducted 18 work-simplification schools during the early part of 1944 at major depots, ports, and camps. Over 600 officers and key civilians representing all the large depots and ports in the continental United States received detailed instructions and training. These schools were followed in turn by other courses conducted by technical services and service commands. Over 5,000 officers and civilians received on-the-job training in work-simplification methods.

In March 1944, the ASF set up a new reporting system retroactive to 1 January 1944, whereby staff divisions, technical services, and service commands showed the number of work-simplification projects undertaken, the number of people surveyed, and the personnel savings realized. A previous reporting system had been in effect from March through October 1943. This covered work-simplification results from surveys of clerical operations, while the second reports included both clerical and materials-handling surveys.

During the 1943 reporting period the ASF as a whole undertook 5,414 work-simplification surveys in which the work of 202,362 persons was examined. Total personnel saved was reported as 20,098, or 10 percent of those surveyed. During the period from January through June 1944, the ASF performed 4,545 work-simplification surveys covering the work of 61,826 persons. Personnel savings of 18,794 individuals were reported, or 30 percent. It was evident that the 1944 program was being conducted on a more intensive basis, and realizing larger proportionate personnel savings.

The accompanying charts show the percent of operating personnel surveyed in 1943 and 1944 by each technical service and service command, and the percent of personnel saved of those surveyed. In service commands the 1943 program in every instance covered more people, but the 1944 program realized larger proportionate savings. The best results were obtained in the Second, Fifth, Seventh, and Ninth Service Commands. Among technical services the results achieved by the Chemical Warfare Service were outstanding, while those of the Quartermaster Corps and the Medical Department were also good.

Two examples may be cited of savings realized through work simplification techniques. In the First Service Command one camp made a series of charts covering the unloading of supplies. This process required 9,800 man-hours per month. Simplified techniques for unloading were developed and introduced which saved 34 percent of the total man-hours required. A study of the issue of field rations

CHART 79

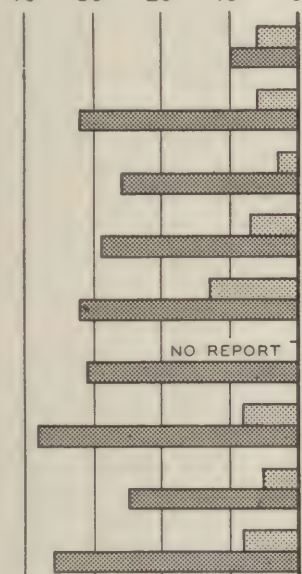
WORK SIMPLIFICATION RESULTS

TO 30 JUNE 1944

PERSONNEL SAVINGS

1944 PROGRAM (CLERICAL)-10% SAVED
1944 PROGRAM (CLERICAL AND MATERIALS HANDLING)-30% SAVED

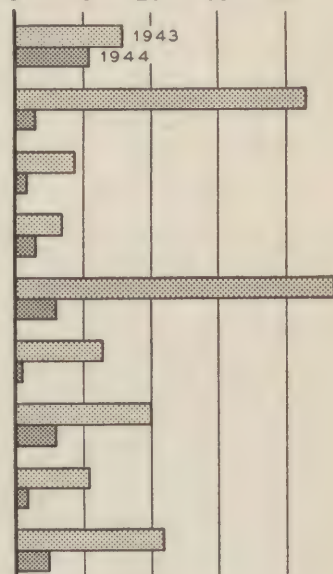
PERCENT SAVED
40 30 20 10 0



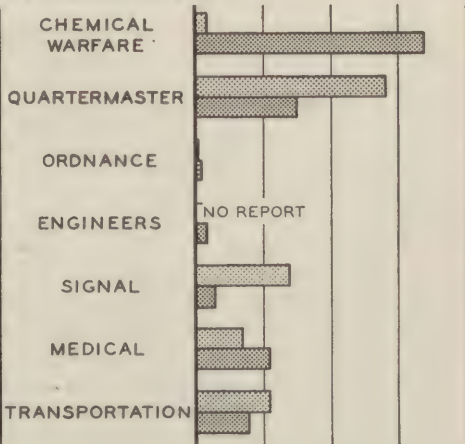
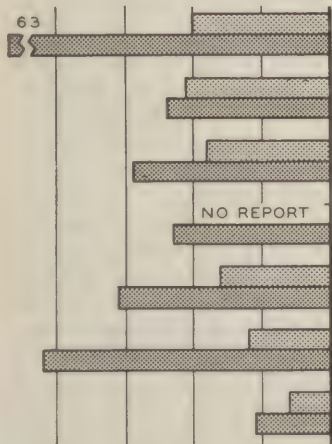
OPERATING PERSONNEL SURVEYED

TOTAL SURVEYS-9,930
TOTAL NUMBER SURVEYED-264,188

PERCENT SURVEYED
0 10 20 30 40



TECHNICAL SERVICES



at a post in the Fourth Service Command resulted in a 20 percent savings in personnel, the elimination of many forms, and the release of one whole warehouse for other uses.

Work Measurement

In making authorizations of personnel among various agencies and installations it quickly became apparent that some means were needed for determining personnel requirements and for indicating the commands with relative efficiency in personnel utilization. The methods first employed were fairly simple. Statistical studies were made which provided a broad comparison for the relative performance of service commands and technical services. The original approach was to examine the performance of an organization over a period of time in terms of its basic work load and personnel. In this way it was possible to observe whether an agency was becoming more or less efficient in its utilization of personnel. The relative performance of ports of embarkation at different times and with each other was measured in terms of tonnage and troops shipped overseas. The same method was employed for depots where tonnage moved in and out and for hospitals where the average number of patients indicated work load. Thus comparisons were made over a period of time for the same organization, and between two or more organizations doing the same type of work, as an indication of efficiency in utilizing personnel. These studies were made for the most part in ASF headquarters.

A second step toward work measurement was taken in December 1943 when ASF Circular 153 required staff divisions to develop in their respective fields measuring rods which would indicate the efficiency of technical services and service commands in using personnel. The work done to develop yardsticks for the stock-control function was an outstanding example of accomplishment under this directive. A committee was set up by the then Stock Control Division with personnel from each technical service. Field studies were conducted to provide the necessary statistical data and other observations. It was then decided that an individual yardstick should be set up for each service.

The stock-control unit at every depot was studied to determine the man-hours required per line item of a requisition in the various sections such as incoming property, outgoing property, stock accounting, and administration. The yardstick became the average man-hours required by the top half of all depots in a technical service. The yardstick man-hours multiplied by the actual number of line items processed during a month gave the total man-hours allowed as a standard. The division of standard hours by actual man-hours in each stock-control unit and its section revealed its percentage of efficiency. The rating of various stock-control units indicated those with relative inefficient performance. Special efforts could then be taken to bring the performance of inefficient units up to the standard.

As just mentioned, the work done to establish yardsticks for stock control activities was a superior accomplishment under the second phase of the work measurement program. By June 1944, it was evident that the practice of requiring staff divisions, and to a limited extent technical services and service commands, to develop inde-

pendent yardsticks was unsatisfactory. The result was a wide variety of yardsticks with different definitions of units to be measured and different definitions of personnel employed. Some systems were quite elaborate and other systems were obviously inadequate. This situation was met by the establishment of a single work measurement technique for use throughout the Army Service Forces. This single approach, introduced in June 1944, was intended to provide data on a comparable basis throughout the Army Service Forces. Standard steps in the determination of work units were provided to get a common definition of the standard to be used in measuring efficient performance. In addition, work-measurement results were pyramided so that each higher level would have some indication of the relative performance of activities under its control.

The new standard work-measurement system set up the means whereby a local installation knew immediately whether it was meeting standard performance or not, and could adjust personnel immediately as work load declined. The careful use of this technique was expected to provide the basis for maintaining a balance between work load and personnel strength.

Instruction on Utilization of Manpower

In February 1944, all schools in the Army Service Forces, including the Command and General Staff School and the United States Military Academy, were directed to provide in each officer course a 1-hour period of instruction on utilization of manpower in the Army in each officer course. This instruction was designed to emphasize to officers the importance of full utilization of manpower to the war effort. The procedures for classification and assignment of personnel were briefly outlined and the causes for waste of manpower and skills were emphasized. Particular techniques of avoiding waste in military units were pointed out such as utilization of physically imperfect personnel, the importance of maintaining the health of the command, and periodic review of skills and assignments. The conservation and proper use of manpower required that officers and enlisted men be placed in jobs corresponding to their physical and mental capacity. Continuing reclassification and assignment was essential to efficient utilization of manpower.

BUDGET

Total obligations (new commitments) for the work of the Army Service Forces during the fiscal year 1944 came to 26.9 billion dollars compared with 41.1 billion dollars in the fiscal year 1943. Net expenditures by the Army Service Forces in the fiscal year 1943 were about 30 billion dollars, and in 1944, 37 billion dollars. Another 2 billion dollars was spent by the Army Service Forces for which they received reimbursement from other agencies such as the Navy Department. The difference between obligations and expenditures was explained by the lag between contracting for supplies and their delivery.

The sums available for obligation during 1944 by the ASF totaled 48 billion dollars. As a result, the unobligated balance at the end of the fiscal year was more than 21 billion dollars. The size of this balance resulted from several different causes. In the first place,

the amount required for pay of the Army was originally estimated for the fiscal year 1944 on the basis of a total Army of 8.3 million men. The maximum size of the Army was fixed during the year at 7.7 million and this size was not realized until the end of the third quarter.

In the second place, and more important, changes in requirements for supplies accounted for an unobligated balance of nearly 13 billion dollars. The reduction in the size of the Army meant a smaller number of troop units to be equipped. Moreover, procurement limitations reduced the number of armored and motorized divisions scheduled for activation. Between February 1943 and February 1944 the number of armored divisions was reduced one-half and the number of motorized divisions from 17 to 2. In addition, the programs for antiaircraft battalions and tank destroyer battalions were substantially decreased. Changes in replacement factors and in inventory levels also affected total supply and requirements. All of these changes necessarily had their effect upon the original budget estimates for the fiscal year 1944.

Army Service Forces estimates for fiscal year 1945 compared with previous years' obligations

Service	Obligations		
	1943 actual	1944 partially estimated	1945 estimated
Total.....	\$41,137,177,102	\$26,996,163,690	\$35,299,494,000
Finance service.....	7,166,376,333	10,890,978,582	12,745,100,000
Ordnance service and supplies.....	15,545,028,417	2,213,633,222	8,599,000,100
Signal service.....	4,083,905,752	2,403,679,454	2,546,000,000
Quartermaster service.....	4,813,498,188	4,866,716,589	5,662,298,100
Transportation service.....	1,715,196,349	2,117,425,089	1,878,677,000
Engineer service.....	6,627,430,043	3,536,326,610	2,692,552,000
Medical and hospital department.....	578,736,832	308,281,623	492,800,100
Chemical warfare service.....	571,100,268	638,638,705	670,000,100
Miscellaneous.....	35,904,920	20,483,816	13,066,600

Army Service Forces fund requirements, fiscal year 1945

Service	Obligations, fiscal year 1945	Savings previous years (carry-over)	Funds required
Total.....	\$35,299,494,000	\$21,170,737,000	\$14,027,602,100
Finance service.....	12,745,100,000	1,575,400,000	4,914,170,700
Ordnance service and supplies.....	8,599,000,100	13,150,000,000	100
Signal service.....	2,546,000,000	3,580,000,000	100
Quartermaster service.....	5,662,298,100	1,100,000,000	5,000,051,100
Transportation service.....	1,878,677,000	0	1,878,677,000
Engineer service.....	2,692,552,000	465,000,000	2,227,552,000
Medical and hospital department.....	492,800,100	492,800,000	100
Chemical warfare service.....	670,000,100	670,000,000	100
Miscellaneous.....	13,066,600	137,537,000	7,150,900

In the third place, savings of more than 6 billion dollars in estimated expenditures were realized by the close pricing program of the Army Service Forces. Original estimates for the fiscal year 1944 reflected prices used in contracts let in 1942, as well as prices for pilot models. In the period from January 1942 through February 1944 there was an over-all decline of 15 percent in the price index

of ASF procurement. Actual obligations during the fiscal year 1944 were lower than estimated because of reduced unit prices.

There were other factors which also produced the smaller obligations in the fiscal year 1944. For one thing, there were fewer civilian employees than originally estimated. Secondly, improved fiscal controls within the Army Service Forces reduced obligations. Monthly reports on obligations and expenditures were received by the Fiscal Director, Army Service Forces; upon examination of the accounts, large unobligated balances were withdrawn from technical services and placed in a reserve which could not be obligated until released by ASF headquarters. Careful control of obligations brought about close inter-relationship between supply needs and current obligations.

The estimated obligations for the fiscal year 1945 for the Army Service Forces totaled 35.3 billion dollars. With a 21-billion-dollar unobligated balance at the end of the fiscal year, only 14 billion dollars in new appropriations were necessary and were requested from the War Department.

The 35 billion dollars requested by the Army Service Forces for the fiscal year 1944 were broken down by project as follows:

Procurement and production-----	\$17, 951, 220, 894
Pay of the Army-----	12, 018, 967, 000
Operating-----	4, 109, 880, 526
Maintenance of structures and operations of util- ities-----	589, 813, 391
Construction-----	313, 173, 310
Research and development-----	116, 497, 295
Education and training-----	87, 587, 584
Administration-----	112, 354, 000

About 51 percent of all funds were needed for the procurement of supplies and equipment, while another 34 percent was needed by the Army Service Forces to pay the entire military personnel of the Army of the United States. The remaining 15 percent of total funds were required for the many operating jobs performed by the ASF. These funds included those required for the storage and distribution of supplies, the transportation of men and material within the United States and overseas, hospital services, the maintenance of facilities within the United States, the performance of administrative and personnel services, and research and development for new matériel.

Nearly 1 billion dollars of the 6 billion dollars left over after procurement and pay of the Army was destined for expenditure overseas under theater commanders. Overseas construction costs were included in the estimates of the Corps of Engineers and overseas communications costs were included in the appropriation for the Signal Corps. In addition, overseas transportation costs were included in the appropriation for the Transportation Corps. Thus, 5 billion dollars represented the estimated expenditures of the Army Service Forces in the next fiscal year for all services in the United States.

All budget estimates were carefully reviewed within the Army Service Forces. Economies realized in practice were included in reduced budget estimates. Thus savings from improved communications operations resulted in 14 million dollars being cut from the 1945 estimates for commercial communications. Other operating economies were translated into reduced budget estimates.

In the second place, more strict budget controls were introduced during the fiscal year over such items as expenditures for printing and binding and for repairs and utilities. Increasing attention was paid to making the budget tool an effective instrument for the economical management of the ASF.

ORGANIZATION

One important change in the functions assigned to the Army Service Forces took place in 1944. By W. D. General Orders No. 37 on 7 July 1943, the responsibility for preparing and defending the budget of the War Department was transferred from the ASF to a Budget Division, War Department General Staff. The budget staff previously in the ASF became the new division.

No major development in the organizational structure of the Army Service Forces took place during the fiscal year 1944. The basic division of responsibility which made the technical services and service commands the principal operating units of the ASF continued to work satisfactorily.

Some new staff divisions were added to ASF headquarters during the year as new functions called for particular emphasis. A Renegotiation Division was created on 1 September 1943, when the volume of renegotiation activity became such that a separate division seemed desirable. A Readjustment Division was established at the end of November 1943 to handle the staff direction of contract termination activities and the disposition of surplus military and industrial property. A Personal Affairs Division was established in February 1944 to take over the direction of this new activity. A Research and Development Division was created on 9 May 1944 out of a branch of the Requirements Division.

A Supply Control Division was created on 19 May 1944, to plan the determination of requirements in the light of supply and issue experience. When this Division was created the former Stock Control Division was redesignated the Distribution Division. A final step was taken on 10 June 1944 when the Requirements Division and the Supply Control Division in ASF Headquarters were brought together as the Requirements and Stock Control Division.

Some minor adjustments were made between offices in ASF headquarters, such as the consolidation within the Mobilization Division of all responsibilities for the determination of organization and equipment of military units activated by the ASF for use overseas. The Army Exchange Service was combined in November 1943 with the athletic and recreation activity and the Army Motion Picture Service to make a new Special Services Division. The education and information work of the former Special Services Division was redesignated as the Morale Services Division. This change was made in order to place in one office responsibility for all off-duty recreational activities of the Army, and to concentrate particular attention upon orientation work as a part of the training program of the Army.

Certain major changes in the over-all staff structure of the Army Service Forces were made in October and November 1943. The Office of the Director of Administration was abolished and The Adjutant General and the Judge Advocate General became separate staff

ORGANIZATION OF THE ARMY SERVICE FORCES



officers reporting directly to the Commanding General. To the Director of Personnel was transferred supervision of the newly formed Special Services Division and the Office of the Executive for Reserve and ROTC Affairs. The Intelligence Division, the National Guard Bureau, and the Office of the Provost Marshal General reported to the Commanding General through the Deputy Chief of Staff for Service Commands. Finally, the new position of Director of Plans and Operations was created in the Office of the Commanding General. The Planning Division and the Mobilization Division formerly under the Director of Operations were assigned to the Director of Plans and Operations. The new position of Director of Supply was created to supervise the Maintenance Division, the Storage Division and the Stock Control (later Distribution) Division. In May 1944 the newly amalgamated Stock Control and Requirements Division was assigned to the Director of Plans and Operations.

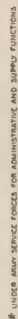
In this way the Army Service Forces set up a central organization for the advance planning of the basic work of the ASF. The Director of Plans and Operations was responsible for planning the Army Supply Program, for planning the overseas and domestic supply systems, for planning the hospitalization and evacuation program, for planning the organization of troop units, and for planning demobilization adjustments. Other staff directors had their planning responsibilities as a part of the supervisory and coordinating authority which they exercised. The Director of Plans and Operations was the central point for insuring that all these plans fitted together into a single coordinated whole. He gave particular attention to planning the overseas supply commitments of the Army Service Forces and for insuring that these commitments were performed.

One other change made during the overhaul of ASF staff structure was to divide the Office of the Director of the Women's Army Corps into several component parts. The part dealing with training was assigned to the Director of Military Training; the part dealing with recruitment was transferred to The Adjutant General's Office; the part dealing with assignments and with general personnel policy was transferred to the Military Personnel Division; the immediate office of the Director of the Corps in November was made a part of the Office of the Commanding General, ASF. In March 1944 the Office of the Director of the Women's Army Corps was transferred to the War Department General Staff.

The organization of the ASF after the staff changes in October and November 1943 is shown in the accompanying chart dated 15 November. Subsequent changes are shown in the chart for 30 June 1944.

The third major shift in organization during the year affected headquarters of service commands and headquarters of posts, camps, and stations. In December 1943 service command headquarters and post headquarters were directed to establish an organization closely paralleling that of ASF headquarters. The principal effect of these instructions was to make technical service officers separate staff advisors to commanding generals of service commands and to commanding officers of posts. In other words, in addition to a director of supply in service command headquarters, there was also a service command quartermaster, a service command surgeon, service command signal officers, service command ordnance officer, service com-

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mand transportation officer, service command chemical warfare officer, and service command engineer. This change was made because technical service officers had other responsibilities than purely supply ones to perform within a service command. Thus service commanders had both a functional staff and a technical service staff in their headquarters.

A survey of representative posts made in September and October indicated that the organizational arrangement which made the commanding officer completely responsible for all ASF functions at a post was sound. The activities performed under their jurisdiction were many, from hospital service to utility operations. On the other hand, all services had in common the post area in which they operated and required common resources, particularly in military and civilian personnel. Savings were possible by shifts in storage and maintenance personnel from one activity to another. The management of all these activities demanded careful direction. The commanding officer was not expected to be a technical expert in medical matters, in communications, or in maintenance operations. Technical service channels were expected to continue to set standards for the individual performance of various specialties. On the other hand, all specialties had to be performed as efficiently as possible, utilizing the minimum of common resources and providing the maximum service to the troop units stationed on a post. This need could be met only by common direction of all ASF activities.

On the whole, there was very little confusion during the year in the relationships between the ASF commander and the Ground Forces commanders at class II installations. The Ground Forces commander at a post was completely responsible for the organization and training of ground force troops. On the other hand, the post commander was responsible for the management of the many different services provided by the post for the troops stationed there. This division of responsibility enabled the Ground Forces to shift troop units from one post to another with the assurance that the post itself would be well managed at all times. Responsibilities of the service commanders at class III installations—air fields and air forces posts—continued to be limited to a few particular activities such as repairs and utilities, special services activities, and disbursing activities.

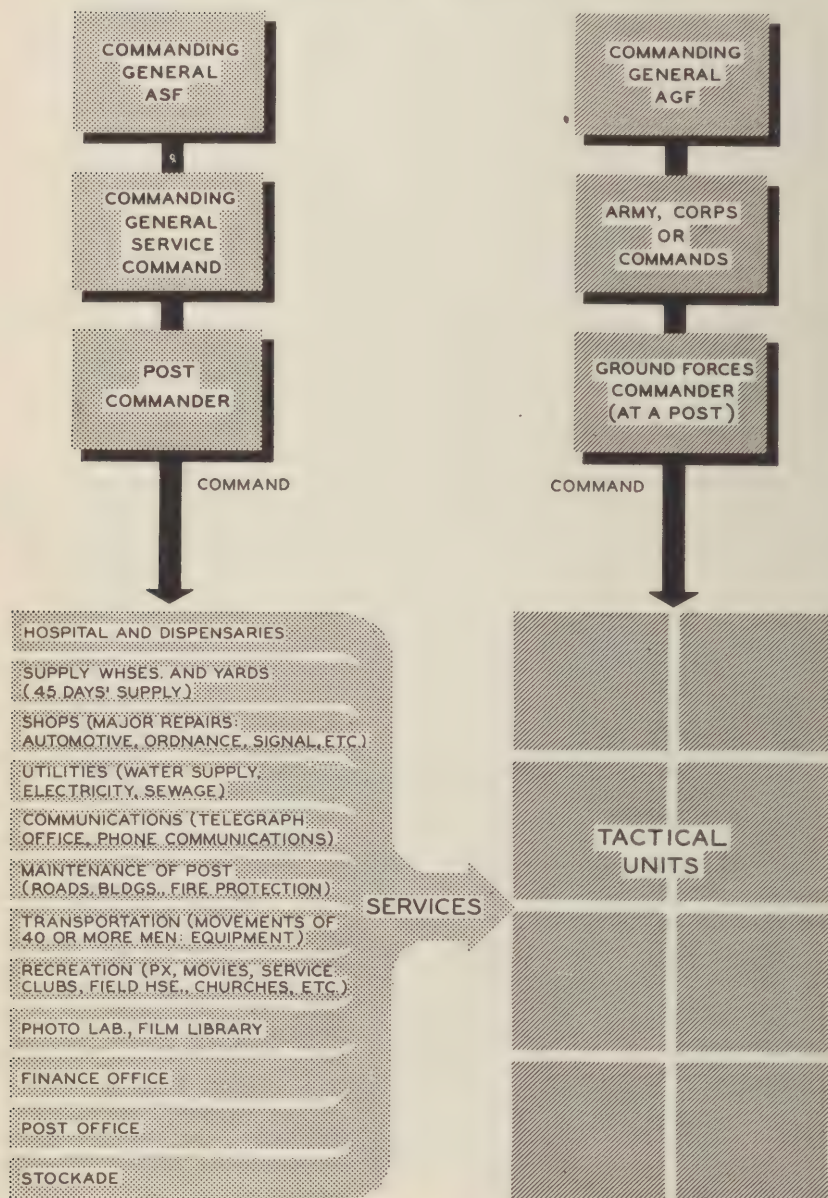
Simplification of Procedures

The program begun during the fiscal year 1943 to standardize and simplify various operating procedures of the ASF was extended on a large front in the fiscal year 1944.

Station supply procedure was standardized by a manual issued in September 1943. This procedure was designed to eliminate delays caused by paper work in the issue of supplies to troop units. Five existing forms were combined into a single purchase order and voucher form. A new property issue slip, replacing 13 previous forms, recorded the issue of supplies by a post to a unit. The new procedure saved the preparation of over 200 million pieces of paper a year. At the end of the fiscal year this station supply procedure was being revised for issuance as a War Department document applying to all military installations.

CHART 83

RELATIONSHIP BETWEEN AGF AND ASF AT A CLASS II INSTALLATION



Standard instructions on the use of United States Government bills of lading were also issued in manual form in September 1943. The new procedure meant the savings of at least 18 million copies of bills of lading in addition to the hundreds of clerk-hours and the many filing cabinets involved in preparing and handling these documents.

In October 1943 a tentative procedure was developed for the use of the War Department Shipping Document covering shipments from vendors to depots or to ports for overseas shipments. This experimentation led to the development of a separate form, the Vendor's Shipping Document, which was placed in use throughout the ASF in May 1944. The Vendor's Shipping Document was a combination form which standardized and simplified procedures for accepting, receiving, and invoicing shipments from vendors. All shipments from vendors on contracts from procurement officers were made as specified by this manual. In general, the use of this single form was accepted enthusiastically by manufacturers as a convenient, simplified method of making shipments.

A standardized procedure for operating procurement district offices was established in a tentative manual issued in November 1943. This manual described the manner in which purchases were to be made by procurement district offices and illustrated the interrelationship among the various operating branches of a procurement district office. For the first time, a standard purchasing procedure was prescribed throughout the ASF.

Procedures for processing requisitions originating overseas were brought together into one simplified standardized form in March 1944. This manual was tied into the depot distribution system of the ASF and was intended to increase the percent of shipments reaching ports of embarkation on or before deadline dates. In addition, it reduced the amount of paper work previously required and improved the quality of supply information sent to overseas theaters. A standardized procedure for regulating the flow of supply and transportation information from ports of embarkation to overseas theaters was published in TM 38-12 in April 1944. This procedure provided complete and detailed information about supplies which were being shipped and supplies which were not immediately available. The same basic information could be used in planning the loading of ships and in providing overseas commands with advance information about the contents of shipments.

Experiments in the standardization of sales commissary operations was begun in November 1943. At the first station studied it was found that 65 issues of rations required the preparation of 1,755 locally mimeographed issue slips. A standardized procedure reduced the number of issue slips to 594 without reducing the number of issue points or daily issues. This would eliminate each year the preparation of over 15 million issue slips, nearly 1,350,000 requisition and inventory forms, and some 750,000 copies of the report of cash collections. Each service command installed the new procedures at one pilot installation before 1 June 1944. Complete adoption was expected early in the fiscal year 1945.

A single unit for the design and standardization of ASF forms was set up in The Adjutant General's Office in April 1944. This action was taken because of the extended use of all types of forms through-

out the ASF and the lack of their standardization. A manual on the proper preparation of forms was developed and distributed through all agencies. The Adjutant General was also given authority to determine the need for manifolded forms. Altogether some 50 million dollars a year previously spent on forms reproduction was expected to be reduced by 40 percent.

Finally, the simplification of procedures for the discharge of patients from hospitals was a major accomplishment in procedures reform. The number of actual forms required was reduced from 54 to 19, the number of copies from 110 to 56, and the number of signatures from 90 to 34. Within these totals, the number of basic personnel forms was reduced from 54 to 6, the number of copies from 57 to 22, and the number of signatures from 30 to 12. The other forms used were medical forms and Veterans Administration forms. Previously it had taken 3 weeks from the time when a hospital decided that an enlisted man should be discharged for physical disability to his final release. Under the new procedure this discharge could be accomplished within 3 days. At the rate of discharge for disability occurring at the end of the fiscal year this change in procedure was the same as increasing the hospital capacity in the United States by 10,000 beds. At the rate of discharge for disability reasons at the beginning of the fiscal year, the savings would have meant an increase of 20,000 beds in hospitals. This change in medical discharge procedure paved the way for general simplification of all discharge procedures.

The purpose in all efforts at simplifying ASF procedures was to increase the efficiency with which particular activities were performed. This efficiency was measured in greater service and more rapid distribution of supplies, together with less personnel and paper work required in performance.

REPORTING

Several new sections were added to the monthly progress report during the year. This report provided the statistical information necessary for the direction of ASF activities and for determining performance in meeting goals. A section on contract price changes was added in March 1944, reviewing the month to month trend in prices paid for equipment and supplies by each technical service. Contract price data went back to January 1942.

A new section on maintenance was added with data as of 31 January 1944. One part of the report showed repair of unserviceable equipment at fifth echelon shops and another part the repair of unserviceable equipment at fourth echelon and combined shops. The data also indicated the quantities of unserviceable material on hand at the beginning and end of the month. A section on safety was added in February 1944. Accident frequency rates, types of disabilities and causes of accidents were shown for War Department installations, and for private industrial facilities on the Master Inspection Responsibility List.

A section on utilization of command installations added in March was a planning document as well as a statistical report. It showed each command installations of the War Department by service com-

mand. In addition to capacity and current load, the expected future use of each post was shown.

In May 1944, a section on contract terminations summarized progress made in effecting final settlement on terminated contracts. The report showed settlement progress including the status of prime and subcontractors claims, and the time required to effect settlements. Settled claims were analyzed to show the relation of property disposition value to total settlement cost, and the relation of gross amounts of settlement to the amounts claimed by contractors.

A new section of the Monthly Progress Report was begun in June entitled "Property Disposition." This report indicated the volume of serviceable property and salvage available for redistribution or disposal and the progress made in effecting final disposition. The information showed estimated costs of excess serviceable property redistributed within the War Department and surplus serviceable property disposed of through sales and transfers to other federal agencies. Comparisons were made between the volume of property declared surplus to disposal agencies and the amount of the property actually disposed of by these agencies.

The development of the supply control system required a new type of reporting to replace previous reports on procurement, deliveries, and supply distribution. A single consolidated statement was prepared for important items giving data on procurement and distribution. Experience data was given for the past 18 months and projected ahead as far as 2 years. Early in the new fiscal year the coverage in the supply control report was expected sufficient to permit discontinuance of the previous separate reports on procurement and distribution.

Reporting Control

Restrictions on the initiation of recurring reports were continued in 1944. No new report could be initiated by any part of the Army Service Forces requiring information from other levels without assignment of a control approval symbol. For reports requested by the War Department General Staff or federal agencies outside the War Department, an ASF registry number was assigned. By the use of control approval symbols and registry numbers it was possible to determine whether a report being prepared by a particular installation was required or not.

Reports initiated by service commands from their own field installations were controlled by the service command itself.

Before any external report was approved and given a symbol, it was determined whether the necessary information was already being provided by an existing report or whether the information could be had by a simple expansion of an existing report.

The first complete manual listing recurring reports throughout the ASF was issued on 15 November 1943. This manual was revised in March 1944 and monthly supplements were prepared thereafter. On 15 November there were 596 recurring reports required by ASF agencies and 309 required by other agencies. In the period from 15 November to 30 June 1944, 327 reports were initiated by the ASF and 99 by other agencies; at the same time 299 ASF reports were discontinued and 87 outside reports were terminated. In addition to dis-

continuing reports the control system was also able to reduce the frequency of many reports and to make the data on others less detailed. This control system was successful in preventing the initiation of many reports which might otherwise have been required.

Publications

In April 1943 The Adjutant General was assigned responsibility on behalf of the ASF for reviewing all publications initiated and desired by any element of the command. Up to June 1944, 245 publications had been disapproved, realizing a savings of 597 million pages. In addition, 93 new blank forms and 49 reprinted blank forms were disapproved affecting a savings of 591.5 million copies. The Adjutant General also accomplished a drastic reduction in such publications as post inspections, classbooks at Army schools, house organs for various installations, and other types of printed materials. At the end of the year publication controls were made even more extensive. Through these means the printing requirements of the ASF were greatly reduced.

INTELLIGENCE ACTIVITIES

In May 1943 the Army Service Forces established its own Intelligence Division as a part of the Office of the Commanding General. The function of this division was to obtain data from overseas and elsewhere on the performance of ASF equipment, ASF trained personnel, medical service, transportation, and other activities. A system was set up for collecting technical information from military and civilian personnel returning from overseas. There was hardly an ASF activity which was not able to make some improvement on the basis of verified information from overseas.

Enemy equipment was collected as captured and returned to the United States for careful analysis by various technical services. Considerable logistical data about overseas water supply, port capacities, road and railroad nets, topography and other matters were collected and provided the appropriate agencies throughout the ASF. Shortages of critical raw materials in Germany and Japan were spotted by analyzing the metals used in captured equipment. Finally, throughout the United States data was provided about disturbances which might involve the use of Federal troops or which threatened interference with war production. Intelligence personnel of the Army Service Forces provided the key evidence in the capture of a prime figure in an espionage ring during the year. In another case intelligence personnel spotted two enemy agents attempting to enter the United States. Supervision was exercised to insure that careful censorship was maintained over troop movements overseas.

Conclusion

In every way possible—through better utilization of personnel, through budget controls, organizational planning, simplification of procedures, inspections, reporting and intelligence activities—the Army Service Forces sought to improve the performance of its work. Each device proved to have its particular place in achieving maximum output of services with the least possible expenditure of manpower and other resources.

Chapter 19. DEMOBILIZATION

At the close of the fiscal year on 30 June 1944, the war against Germany had entered a new, and it was hoped, final phase. American and British Armies were occupying the Normandy Peninsula, preparing for the drive that shortly afterward was to force the Germans out of northern France. The Russians were pounding forward on the eastern front. While no one could predict with certainty the day when victory would be achieved, the end could reasonably be expected in the coming year.

The dictates of good management required the Army Service Forces to lay plans in advance for the adjustments required when victory in Europe was assured. Concern about demobilization, however, was more than a matter of proper preparation. During the fiscal year 1944 certain phases of the work of the Army Service Forces in the United States presented problems closely akin to later demobilization. Nearly 3 years of war brought various readjustments in war activities which provided actual experience in the job of managing curtailment.

In other words, demobilization was not merely a plan, it was an actual problem for the ASF before 30 June 1944. This was evident in at least four different ways—the separation of men from service, the termination of contracts, the disposal of surplus property, and the closing of posts within the United States.

Separation Centers

As mentioned before, the volume of separations, particularly for physical disability, led the ASF to simplify the procedures required for release of military personnel. Improvements were effected in the discharge of men after medical examination. At the same time experiments were begun on procedures for the general discharge of officers and enlisted men. The experience gained from improving discharge procedures for men with physical deficiencies guided the work in establishing new separation procedures.

The first pilot separation center was established at Fort Dix, N. J., on 30 March 1944. Male enlisted personnel eligible for discharge or release from active duty were sent there; men to be discharged for physical disability or dishonorably were not handled in the center. Later, officers, nurses, and WAC personnel were processed by the Fort Dix separation center.

Separation procedures were devised to close out personnel records; clear accountability for property; provide a final medical examination; disburse final pay, travel pay, and if eligible, the first installment on mustering-out pay; close allotments—and do all of this expeditiously. In addition, enlisted men were advised about job opportunities, and about veterans' and other benefits. When he left the center, the discharged soldier had his pay, his uniform, discharge

certificate and lapel button, a statement of his military service listing qualifications and experience, and a pamphlet on his veterans' rights. From the time a man arrived at Fort Dix until he boarded a train for home, the separation procedures in effect at the end of the year required 48 hours. Previously the process took 3 weeks or more. One form discontinued all allotments, reducing processing time for this step 50 percent. In other steps a saving of as much as 90 percent was realized.

By the end of the year the ASF was prepared to establish some 18 separation centers on the new simplified basis throughout the United States, as soon as the load warranted the expansion.

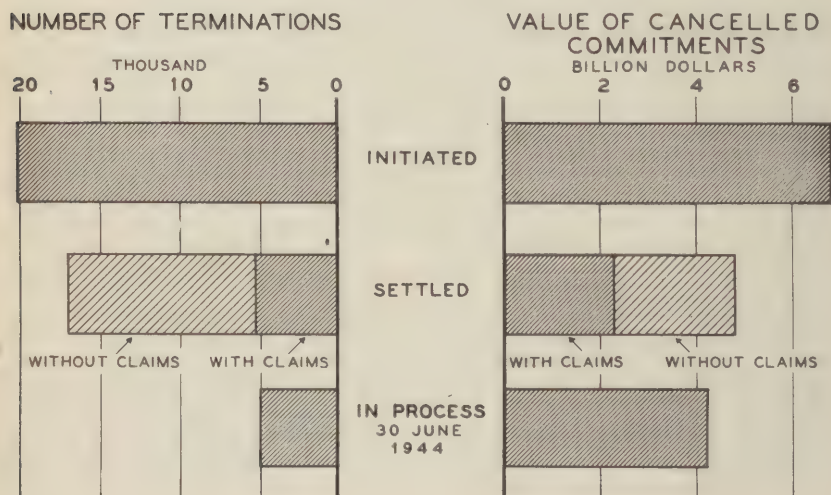
Contract Termination

On 1 July 1943, the War Department had in process of settlement 2,248 terminated fixed-price contracts, cancelling deliveries of 2.8 billion dollars. During the fiscal year another 20,052 contracts were terminated, cancelling commitments of 7 billion dollars. Contractor claims under all these terminations were expected to total 750 million dollars.

Contract terminations resulted from changes in the Army supply program. As particular items of equipment were replaced by other, improved items, or as demands proved less than those anticipated, existing commitments were cancelled. Thereafter, settlements had to be agreed upon between the War Department and the contractor to free the contractor from any immediate loss on work in process.

Out of the total work load of 22,300 contract terminations and nearly 10 billion dollars in commitments, 77 percent in number and 47 percent

CHART 84
CONTRACT TERMINATION STATUS
FIXED PRICE CONTRACTS
FISCAL YEAR 1944



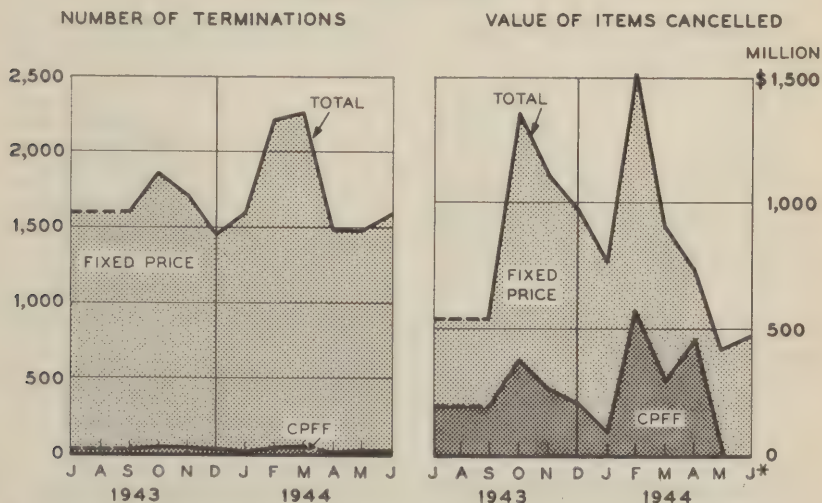
in value had been settled by 30 June 1944. The percentage of work load completed on the basis of numbers ranged from 92 percent in the Medical Department to 51 percent in the Transportation Corps. In terms of commitment value, settlements completed ranged from 82 percent in the Medical Department to 27 percent in the Transportation Corps.

With the largest single number of terminations, and with the greatest commitment value cancelled, the Ordnance Department made a notable record in settlements during the year. The completion of 7,932 contract termination agreements within one year indicated that the existing methods of settlement could be made to work on a volume basis. This record was all the more noteworthy since the total outstanding number of contracts over \$10,000 by the Ordnance Department was only some 12,000.

At the end of the year the backlog of unsettled terminations of fixed-price contracts numbered 5,059, with a commitment value of 5.3 billion dollars. The peak backlog occurred in March 1944. Thereafter the terminations in process of settlement at the end of each month declined. In the last quarter of the year there was also a reduction in the number of unsettled cases outstanding 6 months or more after termination. From a peak of 643 on 31 March 1944, the number declined to 490 such cases outstanding on 30 June. Excluding air forces contracts, the decline was even more substantial, from a peak of 359 to only 148 cases pending over 6 months on 30 June.

On 1 July 1943, there were 40 cost-plus-a-fixed-fee contract terminations outstanding, with an unexpended balance of 576 million dollars.

CHART 85
TOTAL CONTRACT TERMINATIONS
FISCAL YEAR 1944



* CANCELLED COMMITMENTS ON CPFF CONTRACTS IN JUNE 1944 WERE 457 MILLION DOLLARS LESS THAN REINSTATEMENTS OF CONTRACTS PREVIOUSLY CANCELLED.

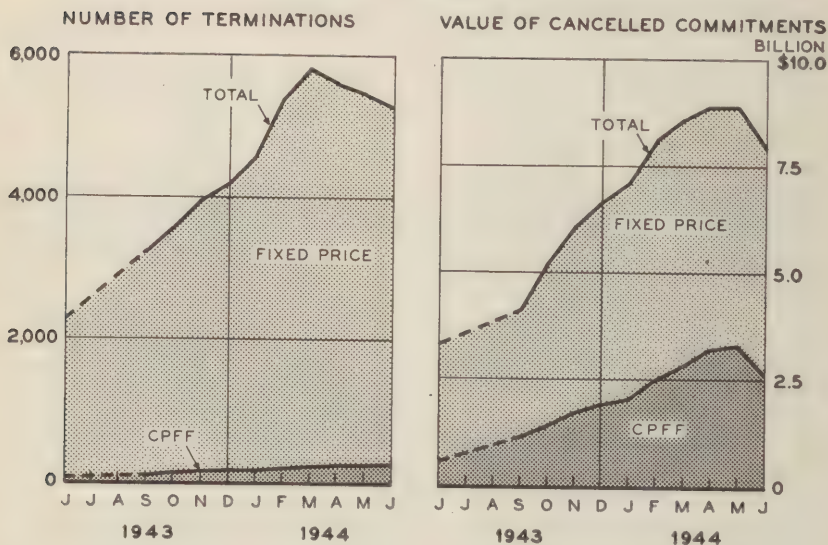
During the year there were 343 additional CPFF terminations involving an unexpended balance of 2.3 billion dollars. Only 165 small contracts were settled during the year, although considerable progress was made in the settlement of subcontracts. Major questions of policy adversely affected the progress in reaching agreements.

At the beginning of the year payments made on settled contracts averaged 77 cents on a dollar of the claim filed by fixed-price contractors. At the end of the year payments averaged 87 cents on the dollar. The increased payment in proportion to the claim reflected greater knowledge on the part of the contractor in preparing a claim.

The contract termination data just mentioned includes figures for the Army Air Forces. ASF headquarters, on behalf of the Under Secretary of War, kept central records on all termination progress, including that of the Air Forces. On the basis of number of cases the AAF had 21 percent of total terminations during 1944, and on the basis of commitment value 32.8 percent. The ASF record in settlements was better than the overall record. On a number basis, the progress index for ASF was 83, compared with a War Department index of 77; while on a commitment value basis the ASF progress index was 54 compared with 47 for the War Department as a whole.

Many developments took place in termination policies during the year. From the beginning of the defense effort in 1940 contracts had provided that in the event of termination for the convenience of the Government, the War Department would pay for all completed, undelivered items, and would pay for the cost of work in process at

CHART 86
CONTRACT TERMINATIONS
IN PROCESS OF SETTLEMENT
FISCAL YEAR 1944



the time of cancellation. This basic policy required considerable amplification and interpretation in use.

To handle these basic questions, the Readjustment Division was set up in November 1943 at the direction of the Under Secretary. The contract termination branch of the Purchases Division formed part of the new division. The director of the division acted on behalf of the Commanding General, ASF, in supervising ASF performance, and as a special representative of the Under Secretary of War on termination matters of the Army Air Forces. In the same month an agreement was made between the War Department, the Navy Department, the Treasury Department, the Maritime Commission, and other procurement agencies to establish a Joint Contract Termination Board. Composed of seven members, this board established general principles and procedures governing contract termination, subject to the general approval of the Director of War Mobilization. The secretary and assistant secretary were furnished by the Readjustment Division.

The work of the joint board was carried on through subcommittees which considered such questions as uniform termination clauses in contracts, subcontractor settlements, clearance of inventories, and disposition of facilities. A report to the Director of War Mobilization on War and Post-War Adjustment Policies by Bernard M. Baruch and John M. Hancock in February 1944, recommended additional policies. Approved statements of policies by the Joint Contract Termination Board were made effective through War Department procurement regulations.

One policy determination provided for prompt approval and payment of subcontractor claims, even though the prime contractor's claim was not yet ready for presentation to a contracting officer. Contracting officers were given authority to empower prime contractors and subcontractors to settle claims of their own suppliers up to \$10,000. Uniform instructions were established requiring that the claims of all first tier subcontractors be examined by War Department officers, and indicating the degree of examination for other subcontractors. Interim financing pending final settlement was made possible. Inventories were removed from a plant within 60 days from receipt of an inventory list, if the contractor requested the clearance of his plant. A contractor might store property of the Government if other storage arrangements were not feasible.

New standard forms were designed for the presentation of settlement proposals. In this way the necessary data was provided in a uniform and simplified fashion. At certain large plants field accounting representatives and disposal advisory officers were stationed. The field accounting representatives examined the termination claims submitted by contractors and subcontractors. The disposal advisory officers recommended disposition of property on settlement claims. These officers in a plant represented all War Department contracting officers having contracts with the plant. In this way one group of termination examiners and advisors became completely familiar with the operations of a plant.

For more than a year certain industries and Government agencies suggested a "horizontal" rather than a "vertical" approach in the settlement of termination claims. Under the vertical plan subcontractors presented their claims to their purchaser, and he to his purchaser,

until the prime contractor was reached, who settled all claims and presented a final claim to the Government. Under the horizontal or "over-all" plan, the Government would make a settlement with the prime contractor based upon his estimates, and the prime contractor would then assume responsibility for settling the claims of all subcontractors. Although doubtful about this method, the War Department was experimenting with it at the end of the year.

"No cost" settlements with contractors were encouraged, since these involved no outlay for the Government. The major obstacles to such agreements were renegotiation and tax questions. There was no official ruling about the effect of a release or waiver upon a contractor's tax liability, or any information on how the contractor was to obtain credit for his cost in making his income-tax return. If the contractor retained his inventory of materials of work in progress, the value of the property at the time of a "no cost" settlement might become important in renegotiation proceedings, since a subsequent increase or decrease in value would be excluded in determining renegotiable profits. These problems were still unsolved at the end of the year.

A major necessity of the year was to acquaint prime contractors and subcontractors with Government requirements for final settlement of terminated contracts. A contractor's guide was prepared and issued during the year which presented in the simplest possible form the many steps to be taken by the contractor and the Government in settling terminated contracts. In addition, personnel from business were invited to War Department contract-termination schools. Of the 15,000 people who had attended these courses by 30 June, 10,000 were from private business. Various schools and colleges also planned contract-termination courses for the benefit of contractors in their areas. These courses were to be conducted under the direction of the United States Office of Education with a substantially uniform curriculum approved by the Readjustment Division. The instructors for these courses were trained in the War Department courses. This training, associated with engineering, science, management, and war training, supplemented the courses offered to contractor personnel by the War Department itself.

The termination of a cost-plus-a-fixed-fee contract involved certain problems entirely distinct from those encountered in terminating a fixed-price contract. The contractors' expenditures in settling claims and closing down plants were reviewed by Army auditors and reimbursement made in the same way as ordinary expenditures. Any items which the General Accounting Office questioned as not meeting the terms of the contract or necessary for the contract's performance were suspended. The furnishing of additional data on these items often resulted in substantial delay in accomplishing a final settlement agreement. Since the basic theory of the cost-plus-a-fixed-fee contract was that the contractor would "come out whole," final agreement with the contractor was not possible until all costs had been ascertained and all suspensions cleared.

The importance of this situation was brought out in a survey in one of the technical services which showed that of 40 pending terminations of CPFF contracts, 27 were involved in the satisfaction of 764 informal inquiries and suspensions from the General Accounting Office. In addition to this problem special contract provisions such as those

governing reconversion further complicated final settlement. At the end of the year the General Accounting Office agreed to expedite its auditing of terminated CPFF contracts.

A major obstacle in realizing prompt settlement of terminated contracts arose from delays in receiving contractors' claims. The total time required for settlement was divided into two almost equal parts, the first representing the time required by the contractor in filing his claim and the second representing the time required to settle after the claim was received. There was an apparent lack of interest in prompt settlement by many contractors because they were receiving replacement contracts in many instances. Other delays were caused by a lack of trained personnel in business, as well as uncertainty about the effect of contract settlements on renegotiation and about the final authority of the War Department on contract settlement. All of these problems were expected to become less burdensome in 1945. There was some concern, nonetheless, about the possibility that contractors would be so much interested in reconversion immediately after victory that they would delay preparation and presentation of claims.

By the end of the year about 4,800 individuals throughout the War Department were engaged in contract-termination work. Because of the acute shortage in accounting personnel, approximately 800 enlisted men were transferred to various procurement districts in the spring of 1944. All personnel, civilian and military, were trained in field offices and in special training schools. The Army Industrial College conducted a 2 weeks' training course for civilian and military personnel providing a background of termination policies and procedures to those with some procurement experience. The school operated by the fiscal director gave instruction to accountants and auditors. The Judge Advocate General school taught lawyers in the Army who had not been doing procurement work. Each of the district offices also trained personnel in termination procedures.

The Army Service Forces were determined to have contract-termination work current by the time of Germany's defeat. Plans were in preparation to insure that adequate personnel would be available to handle the termination load which would then occur. The experience in settling terminated contracts during 1944 provided an excellent background in preparing for eventual demobilization.

Property Disposal

A third major problem during 1944 which closely resembled conditions of demobilization was the disposal of surplus property. Changes in supply needs overseas and the development of new types of equipment made many items of equipment excess to the needs of a technical service. There was no point in utilizing valuable storage space to stock unneeded goods; there was every reason to dispose of unneeded property at a period of general shortages in the national economy.

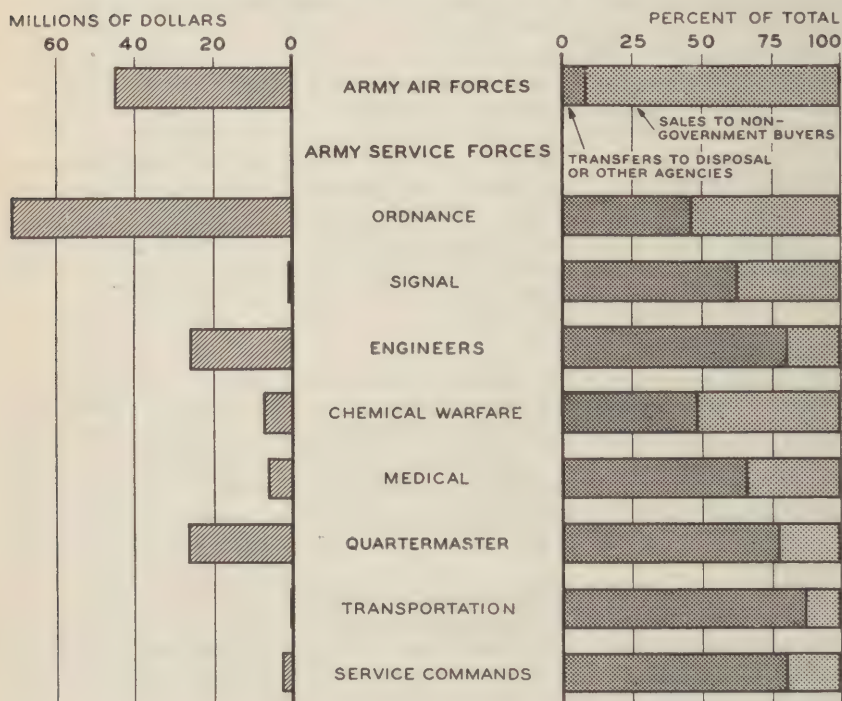
The disposal of unneeded property involved two basic steps. The first was a determination that certain supplies and equipment were excess to the needs of the technical service supplying the item. ASF Circular 67 in March 1944, setting up the supply control system, established definitions for the minimum reserve stocks which were to be held

by technical services. While each service was expected to maintain a 90-day inventory in its depots, they need not declare property excess except under one of two conditions. For easily procured supplies, a technical service was not to declare property excess if there was a prospective need for all the supplies within the next 12 months. For purely military items with no civilian or war industry use, the excess levels were fixed at 24 months estimated future requirements.

When property was declared excess, other technical services and other Government agencies were informed through circularization. The property not thus absorbed was then disposed of through established disposal channels, the second basic step.

During the fiscal year 1944 approximately 134 million dollars worth of excess property was redistributed among the technical services. Of this total, 122 million dollars was ASF property and 12 million dollars represented Army Air Forces property. Within the ASF some 58 million dollars worth of property was made up of ordnance items and another 41 million dollars of engineer supplies and equipment. The Chemical Warfare Service transferred 10 million dollars worth of property to other War Department services; the Medical Department, 9 million dollars worth of property; and the Signal Corps, 2 million dollars worth of property.

CHART 87
SURPLUS SERVICEABLE PROPERTY
DISPOSED OF BY THE WAR DEPARTMENT



Some 186 million dollars worth of surplus property was disposed of during the year, of which 141 million dollars was ASF property and 45 million dollars was Army Air Forces property. The division of this amount by technical services is shown in the accompanying chart.

Altogether, about 82 million dollars of ASF surplus property was disposed of by transfer to the Navy Department or to disposal agencies, and 57 million dollars worth of property was sold to nongovernment buyers. Complete records for the last 9 months of the fiscal year showed War Department transfers to the Navy amounting to nearly 33 million dollars worth of property, and transfers of another 41 million dollars to disposal agencies, mostly to the Treasury Department. Of 98 million dollars worth of War Department property sold to nongovernment buyers, nearly 50 million dollars was sold by CPFF contractors and 38 was sold directly by the War Department.

A careful study of progress in the disposal of surplus property was made by the ASF in February 1944. This indicated that considerable quantities of excess and surplus property were accumulating in the absence of prompt disposition. Of some 23,000 motor vehicles which had been declared surplus, only 3,000 had been turned over to the Treasury Department for disposal. The Medical Department had nearly 65 million dollars worth of surplus military property on hand and the Quartermaster General had even more that had not been disposed of. During the last 6 months of the calendar year 1943 the engineers had disposed of 2.9 million dollars worth of property out of an estimated 15 million dollars worth of surplus property on hand. Such findings as these indicated that considerable improvements were necessary in the machinery for disposal of excess and surplus property.

In November 1943, the newly created Readjustment Division was given responsibility for directing the disposal of excess and surplus property and of salvage. The determination of excess property was the responsibility of stock control officers. It became apparent at once that actual disposal of surpluses would entail the conduct of a vast merchandising enterprise which would divert the energies of the ASF from the procurement and supply of fighting forces. Accordingly, the War Department advocated the establishment of a central agency to assume responsibility for disposal of all governmental surpluses. The Report on War and Post-War Adjustment Policies submitted by Mr. Baruch and Mr. Hancock to the Director of War Mobilization advocated the creation of a central disposal agency. This was done by Executive Order No. 9425 on 19 February 1944, when the Surplus War Property Administration was set up. In May, five agencies were assigned to dispose of surplus property: The Procurement Division of the Treasury Department was to dispose of consumers' goods; the Reconstruction Finance Corporation, of capital and producers' goods including industrial equipment, raw materials, and industrial real estate; the United States Maritime Commission, ships and maritime property; the War Food Administration, food; and the Foreign Economic Administration, property located outside the United States. Until the determination that these agencies would handle disposal activities, the ASF itself had engaged in the disposition of surplus property.

Under both procedures it was the responsibility of the Army Service Forces to determine what property was excess to its own needs. As already mentioned, property was first determined to be excess to the particular service which procured it and then later declared surplus to the War Department as a whole. The problems of disposition involved different considerations for various types of property. Within the Army Service Forces there were two broad categories of property: military and nonmilitary. In a third different category was salvage. The disposition of surplus command installations, that is, Army posts and Army storage facilities, was a different type of problem.

Military property was made up of all the supplies used by troops. When any of these items exceeded the required quantities already mentioned, the technical service took steps to inform other technical services, the Air Forces, the Navy, and other Federal agencies of the excess property through circularization. Ordinarily only standard items and any others for which a need could be foreseen were supposed to be circularized. In practice, however, obsolete and nonstandard property came to be circularized indiscriminately and over a considerable period of time. This procedure necessarily handicapped the prompt declaration of property as surplus and its subsequent disposal. Many posts and camps tended to requisition circularized property for which they might have a remote need. In the third quarter of the year a series of measures was adopted to speed up redistribution of excess stocks through the stock-control system.

One step to accelerate redistribution was taken in November 1943, when commanding generals of service commands received authority to declare certain obsolete and nonstandard items and certain post engineer supplies surplus after circularization within the service command and to immediately adjacent service commands. In April 1944, depot commanding officers received authority to declare nonstandard and obsolete property located at posts surplus without circularization. In this way responsibility was placed upon the stock-control system to determine where supplies were needed. Service commanders continued to have authority to declare post engineer property, coal, athletic and recreational equipment, and certain training equipment as surplus.

A new procedure was developed and prepared for adoption at the end of the fiscal year which would permit a technical service to declare property surplus without reference to higher headquarters when the aggregate cost for a single item or group of closely related items was under \$500,000. At the same time supplies of common interest to various technical services and service commands were to be circularized only when another service indicated an interest in the item. In other words, circulars of excess property would not be distributed indiscriminately but only to those agencies indicating an interest in receiving notice of certain types of excess property.

When military property was declared surplus, the Procurement Division of the Treasury Department was responsible for actual disposal. In April 1944, the policy was adopted which permitted the Army Service Forces to dispose of surplus military property directly when prompt action was not obtained through the Procurement Division. In general, property reported surplus to the Treasury

Department was held at its location until disposal by that agency. Property with an aggregate value of less than \$100 was usually sold as salvage.

Nonmilitary property to be disposed of consisted of three different types of items—industrial tools and equipment, termination inventories, and industrial plant. Even before the establishment of the Surplus War Property Administration arrangements had been made whereby the Treasury Department and the War Production Board directed the disposal of surplus nonmilitary property.

As a rule nonmilitary property was also circularized among various services, including the Navy Department, before its actual declaration as surplus. The extent of circularization depended whether the property was industrial machinery; heavy construction on equipment; steel, copper, and aluminum; or other property. In September 1943, the Ordnance Department was designated as the agency to store and dispose of excess production equipment and the Corps of Engineers handled construction and utility equipment. Other technical services turned over excess property after circularization to these two agencies.

Circularization lists on industrial property were provided the War Production Board, which directed eventual disposition. Circularization lists for heavy construction equipment were provided the Procurement Division of the Treasury Department, which likewise arranged eventual disposition. All procedures for classifying and disposing of nonmilitary property were unduly cumbersome and were in process of revision when the Surplus War Property Administration was created. In April technical services were directed to report all nonmilitary property of a consumer-goods type to the Treasury Department when it had been circularized for more than 30 days. Machine tools and production equipment circularized more than 60 days were to be reported to the Reconstruction Finance Corporation. Other nonmilitary property, except production plant, was to be tentatively listed and held for instructions from the Surplus War Property Administration.

Revised instructions on circularization were issued at the end of May 1944. No production or utility equipment was to be held without circularization for more than 60 days after becoming idle unless declared stand-by equipment. Notification of surplus property was made thereafter to the agencies designated by the Surplus War Property Administrator.

In the settlement of terminated contracts the disposal of inventories of raw materials and work in process was one of the major sources of delay. The general practice was to hold up settlement of contract termination claims until the contractor had disposed of the property involved; the conversion of contractors' facilities to other types of production was thus delayed and the backlog of unsettled cases increased. In February the report on War and Post War Adjustment Policies recommended that contracting agencies clear termination inventories promptly from industrial plants. This policy was adopted by the War Department on 3 March and later enacted into legislation in the Contract Settlement Act of 1944. The War Department thus became responsible for removal and storage of property upon the expiration of a 60-day period after the contractor had submitted an inventory.

After the War Department assumed responsibility for storing and disposing of termination inventories 60 days after receipt of inventories, every effort was made to dispose of this property as promptly as possible. Formal circularization procedures were not required. Local procurement district offices were expected to inform WPB offices and other War Department offices of property on an informal basis. The procurement district office remained responsible for arranging actual disposition. Contracting officers were directed to sell "at the best prices reasonably obtainable, even though this may sometimes require going far below cost on a nominal market." Sales were subject to approval by disposal boards set up in the local offices of technical services when the estimated cost of items disposed of below cost exceeded \$100,000, or when items costing \$10,000 were sold at 25 percent below cost. In those cases where sale was made at the best price obtainable the stipulation was added that the buyer must use or consume the property in the United States and not resell it at a profit.

In April 1944, ASF headquarters created an Industrial Storage Branch to direct the storage of surplus industrial property resulting from clearance of plants where contracts had been terminated. This Branch worked with the Space Control Committee of the Surplus War Property Administration. This committee in turn had nine regional subcommittees maintaining current inventories of industrial storage space in their respective areas. The Storage Division of ASF headquarters named War Department representatives on these subcommittees. Requirements for storage space within an area were submitted by procurement offices to the Space Control Committee. At the end of the fiscal year a survey was under way to determine how much space at depots and at posts, camps, and stations might be used for industrial storage.

When an entire industrial installation operated by the Army Service Forces was no longer required for the production of supplies, it was placed in a stand-by position or declared excess. A plant became stand-by when large inventories of finished items were accumulated; the possibility that future rates of issue might increase considerably justified retention of the production facility. When a plant was excess, it was reported to the Production Division in ASF headquarters and circularized in the same manner as other types of property. If no other service desired the plant, it was declared surplus and transferred to the custody of the Chief of Engineers awaiting ultimate disposition. The Chief of Engineers had authority to make temporary use of installations pending final disposition.

By 30 June 1944 there were 14 plants in stand-by status: 10 of these were ordnance plants, most of which produced ammunition; 3 were chemical-warfare plants; and 1 a searchlight mirror plant. Five plants, all ordnance, had been declared surplus but were not disposed of. Two ordnance plants had been transferred to other use, one to the Navy Department. The surplus industrial plants were valued at nearly \$100,000,000.

The remaining category of surplus property which the War Department had to dispose of during the year was salvage. Careful figures on salvage sales were collected for the last 6 months of the fiscal year. In that period nearly 50 million dollars worth of salvage was disposed of. Of this total, 38.5 million dollars was current production

scrap from War Department operated installations and 10.5 million dollars was salvage of nonrepairable supplies and equipment turned in at posts throughout the United States. Finally, about 1 million dollars worth of salvable supplies was returned from overseas. These figures did not show, of course, the salvage of lumber for packing and crating purposes nor the use of salvage materials in the construction of bayonet courses, as target materials, as wiping cloths, and for other purposes.

When fired brass small arms and artillery cases accumulated beyond the requirements of copper smelters, the ASF took a leading role in developing other markets for consumption of ammunition cases. An intensive campaign was waged throughout the United States to salvage waste paper. More than 28,000 tons of waste paper were sold by posts in May 1944. Some clothing and shoes were turned over to the Treasury Department to be repaired and renovated for foreign relief purposes. By the end of the year nearly 50 carloads of clothing and blankets were being shipped to the Treasury Procurement Division each week.

Reports on the sale of salvaged items were submitted by each service command every month so that prices obtained might be compared. In this way ASF headquarters could call the attention of service commands to particularly low prices being received for salvaged materials. All Army posts followed the general practice of selling scrap at least once a month. Large accumulations were not desired.

During the year, salvage segregation centers were established at Frederick, Md., New Orleans, Seattle, Berkeley, South Gate, Calif., and Fort Lewis, Wash., in addition to one already in operation in New York City. These centers handled the increasing quantities of scrap and salvage returned from overseas. Theaters of operations were directed to return nonrepairable supplies containing materials needed in war production. More than 105,000 tons of ferrous scrap were sold by these overseas segregation centers during the fiscal year.

Salvage functions became so important that staff direction of the activity was vested in the Production Division, ASF, and then in the Readjustment Division after its creation in November 1943.

In the various categories of military property, nonmilitary property, and salvage the Army Service Forces during the fiscal year 1944 found considerable quantities no longer needed. The machinery for prompt disposition of all this property was in operation at the end of the year. While the burden was light in comparison with the expected load once the war had been won, the machinery for disposition had been set up and used.

Command Installations

The steady decline in the size of the Army in the United States from 1 July 1943 throughout the fiscal year presented the problem of the number of posts to be operated for continuing training activities. The economical utilization of command facilities could be realized only by the complete closing up of certain posts and the maximum operation of others. As long as any troops were stationed at a particular camp, overhead operations had to continue on a sizable scale. There were utility services to provide, roadways to maintain, and supplies to warehouse and distribute. The abandonment of smaller

posts and the concentration of training activities at large installations saved overhead. The realization of these objectives was not simple.

No post could be closed until all troops had departed. The Army Service Forces recommended the closing of individual posts to the War Department. Final approval and disposition depended upon the approval of higher authority. Recommendations that a command installation be placed in a stand-by status were submitted by service commands to ASF headquarters. Upon approval of higher authority, excess installations were turned over to the Chief of Engineers for custody. Command installations were held in stand-by status for later use or for disposal.

As a means for developing a planned program of camp closings, the ASF in March 1944 began preparation of a monthly report on utilization of command facilities. By indicating the capacity and prospective load to the end of 1944 for various facilities, it was possible to identify posts which were not fully utilized and consequently expensive to operate. By 30 June 1944, 28 posts and camps used by the Army Ground Forces and the Army Service Forces were inactive. These camps had a total capacity of 84,000 men. Tentative plans for the first half of the fiscal year 1945 called for the closing of an additional 47 posts with a total capacity of 753,000 men. This left 104 posts and camps remaining active throughout the calendar year 1944. Since only some two-thirds of the capacity of all these posts would be utilized by 31 December 1944, further effort had to be given to planning additional closings. No post had been disposed of by the end of the fiscal year. Much of the land had been leased to farmers for agricultural purposes.

As a guide to the activities necessary for the closing of a command installation, the ASF prepared a check list of procedures and policies on changing of status. In this way service commands had a complete guide in closing camps.

The difficulties in closing a command installation were well illustrated in the abandonment of the California-Arizona maneuver area, one of three such areas discontinued during the fiscal year. Comprising a total area larger than the State of Pennsylvania, the California-Arizona maneuver area was set up on 25 November 1942, as a theater of operations for training Ground Forces troops. Most of the land was mountainous and desert with very little population. With the exception of small holdings, it belonged to the Federal government, to the States of California and Arizona, and to the Southern California and Santa Fe Railway Companies. Installations in the California-Arizona maneuver area included nine divisional camps, two camps for corps troops, one special training center, three general hospitals, eight station hospitals, railway sidings, landing strips, bivouac areas, a base general depot, an ordnance base supply and replacement depot, regulating stations, and truck and rail heads. All were operated by the Army Ground Forces.

Since the maneuver area had served its purpose, the War Department on 12 February 1944 directed the Commanding General of the Army Service Forces to evacuate and dispose of all property and material in the area. The actual date for transfer of command from the Army Ground Forces to the Army Service Forces was to be determined by mutual agreement, but was to take place not later than

1 May. The Army Service Forces was directed in the meantime to repair and evacuate equipment in excess of that required by the Army Ground Forces upon departure from the area. In addition, the ASF provided liaison officers and an organization to assist the Ground Forces commanding general of the area in the evacuation and in the handling of supplies and salvage. The actual job was performed by the Ninth Service Command of the Army Service Forces.

The magnitude of the evacuation task may be indicated by using as a yardstick such standard items as gasoline and water cans, folding cots, tentage, and loaded railroad cars. Among the items collected, tested, repaired, and shipped out of the area were 308,000 gasoline and water cans, 305,898 folding cots, and 91,100 tents. This tentage was designed to house 720,000 men, a city larger than Washington, D. C., in 1940, and larger than the combined population of Delaware, Nevada, and Wyoming. Exclusive of the supplies accompanying the troops themselves, over 7,500 carloads of freight were loaded out of the area. This was enough to form a freight train 83 miles long. Of the 7,500 carloads of freight, nearly 6,000 were ordnance supplies. Thanks to the assistance of the Army Ground Forces in the area the evacuation was handled rapidly and in orderly fashion.

In addition to the supplies evacuated from the area, signal lines were taken down, post exchanges were closed and accounts audited, and many claims from citizens in the area investigated and adjusted. Some 270 real-estate leases and agreements were terminated and turned over to the Chief of Engineers for final disposition. On 1 May some 9,000 officers and men came under the command of the ASF, about one-third of whom were transferred elsewhere as units and about two-thirds of whom were reassigned through a provisional replacement depot.

The principal difficulty in evacuating the area was in obtaining authorization to ship supplies as they were loaded. Many depots were unable to receive, unload, and warehouse the property as fast as it was ready to move. Another difficulty was experienced in obtaining supplies and spare parts to repair serviceable equipment. Special machines and tools were set up in the area to accelerate the repair of serviceable property. All salvage was disposed of locally by transfer to the Procurement Division of the Treasury Department.

Certain installations in the area were transferred in their entirety to other agencies. Three general hospitals of 1,000 beds each were transferred to the Navy Department. The Pamona Ordnance Base was taken over by the Ninth Service Command as one of its installations. The San Bernardino base general depot was transferred to the Chief of Engineers, while the Quartermaster repair shops there were taken over by the Quartermaster General.

The abandonment of the California-Arizona maneuver area was a large-scale demonstration of the work involved in demobilization of military installations. It was used as a testing grounds for the procedures developed by the Army Service Forces. The experience provided a guide for future such undertakings.

Demobilization Planning

Discharge activities, the termination of contracts, the disposal of

surplus property, and the closing of command installations were major phases of demobilization within the United States. These activities had to be assessed in terms of the eventual demobilization burden. In addition, plans for other phases of demobilization were prepared. By the end of the year there were three basic ASF plans: for the readjustment of personnel, for supply demobilization, and for industrial demobilization. These comprehensive plans were prepared on the basis of studies made by staff divisions of the ASF.

A monthly report on demobilization planning was initiated at the end of the fiscal year as an indication of the status of actual preparations. Such subjects were considered as the number of posts required throughout the demobilization period and for the post-war military establishment, the functions and composition of the ASF in the post-war establishment, industrial facilities to be retained for post-war use, war reserves of supplies for the post-war army, the location of additional national cemeteries, plans for the return of overseas dead.

Planning was begun in October 1943, for the movement and demobilization of personnel following the defeat of Germany. The two primary problems were the manner in which personnel were to be returned and the selection of separation centers to be used in discharging soldiers. Upon determination by the War Department of the methods for returning overseas personnel, ASF headquarters prepared a procedure for readjustment movements which was ready for publication at the end of the year. Another operational procedure was prepared for the disbandment and inactivation of ASF units. This procedure brought into one document all requirements existing in current regulations and incorporated certain new policies of the War Department and the ASF. It included an explanation of the distinction between disbandment and inactivation, a list of regulations affecting disbandment, sample forms of directives, a check list of necessary actions, and a suggested time table.

A special Army Supply Program was prepared during the year showing supply requirements for the period after the defeat of Germany and during the continuance of the war against Japan. This supply program was being revised at the end of the year on the basis of the latest troop plans provided by the War Department. Total required production was determined by subtracting stock on hand from total issue requirements. The computation showed total issue requirements for the Army, the Navy, and international aid within three major areas—the Pacific, the European, and continental United States. These supply computations indicated the future procurement requirements of the Army Service Forces once Germany was defeated. Necessarily, this planning involved such problems as desirable redistribution of supplies no longer needed in the European area, the determination of specific contracts to be terminated within the United States, and the disposition to be made of Government-owned facilities.

In May 1944 the ASF directed each technical service to prepare plans for modernizing all permanent arsenals and other facilities to be held as a post-war reserve. In addition, special types of machine tools and production equipment might be retained in storage as a peacetime reserve. In general, special machine tools not ordinarily

produced in a peacetime economy, such as shell turning lathes and gun boring machines, were to be retained. Inventory reports on all industrial facilities were set up to provide a single complete listing of all industrial plants owned by the War Department or constructed at its request.

An advisory board on utilization of surplus industrial facilities was set up by the Chief of Engineers during the year. This board was composed of seven members and seven alternates who served as expert consultants on a per diem basis. These men were executives and engineers in industrial organizations. The function of the board was to examine industrial facilities owned by the War Department and to prepare recommendations about possible peacetime utilization.

The Morale Services Division gave particular attention to the problem of maintaining morale among men awaiting return to the United States and to making this period as profitable as possible in preparing soldiers for return to civilian life. Research studies of this division were utilized in determining a service rating card for indicating priorities in discharge of personnel. A large-scale program for general and vocational education for soldiers overseas was planned. Three types of overseas schools were to be set up—unit schools, technical schools, and Army university centers. These schools were to be organized and operated by military personnel using Army instructors.

Unit schools would receive approximately 30 courses representing a basic program for their operation. Other courses would also be available. Vocational training courses would cover agricultural, mechanical, and technical fields. These courses were designed to meet the vocational training needs of servicemen at all levels of education and experience. On-the-job training in particular was to be emphasized. Finally, the university study centers would provide general education covering training in English, mathematics, science, social studies, arts, and foreign languages. More than 95 percent of the texts to be utilized in the program were selected and their procurement begun. Course outlines, instructor guides, and visual aids were being prepared to accompany these courses.

Upon the cessation of hostilities in any theater, the theater commander might set up these training programs to the maximum extent compatible with the continued performance of necessary military duties. A school and college accreditation service was set up to report a soldier's education achievements in the military service to schools and colleges. From this report the school might evaluate a man's educational work and grant academic credit accordingly. Current plans also provided for a general educational development test to be given all soldiers prior to separation from the service.

Conclusion

It became apparent that a major part of the job in redeployment of the Army and in demobilization after the defeat of Germany would fall to the Army Service Forces. Then, after the defeat of Japan, there would still be extensive work to do in achieving an orderly transition from a wartime to a peacetime military establishment. The Army Service Forces could anticipate only a slackening in the volume of some of its activities as victory approached, with no assurance that its over-all responsibilities would be lessened until well after peace comes.

ARMY SERVICE FORCES

KEY PERSONNEL

30 JUNE 1944

Commanding General-----LIEUTENANT GENERAL BREHON SOMERVELL
Chief of Staff-----MAJOR GENERAL W. D. STYER

OFFICE OF THE COMMANDING GENERAL

<i>Director of Plans and Operations</i> -----	MAJ. GEN. LEROY LUTES
<i>Deputy Director</i> -----	BRIG. GEN. W. A. WOOD
<i>Deputy Director for Demobilization</i> ---	BRIG. GEN. STANLEY L. SCOTT
<i>Special Assistant</i> -----	BRIG. GEN. WILLIAM A. BORDEN
<i>Special Advisor</i> -----	MR. HOWARD BRUCE
Requirements and Stock Control-----	COL. H. M. REEDALL
Planning Division-----	COL. C. B. MAGRUDER
Mobilization Division-----	COL. C. E. DISSINGER

Succeeded Col. William E. Carraway on 19 March 1944, who relieved Col. C. E. Dissinger on 1 November 1943.

Control Division-----	BRIG. GEN. C. F. ROBINSON
Deputy Chief of Staff for Service Commands--	BRIG. GEN. J. F. BATTLE

Succeeded Brig. Gen. C. H. Danielson on 6 January 1944, who relieved Acting Deputy Ch/St for Service Commands Brig. Gen. Philip Hayes on 1 December 1943. Brig. Gen. Hayes had succeeded Maj. Gen. George Grunnert on 15 August 1943.

The Provost Marshal General----- MAJ. GEN. ARCHER L. LERCH
Succeeded Maj. Gen. Allen W. Gullion on 21 June 1944.

National Guard Bureau----- MAJ. GEN. JOHN F. WILLIAMS
Intelligence Division----- COL. J. M. ROAMER

TECHNICAL SERVICES

<i>The Quartermaster General</i> -----	MAJ. GEN. EDMUND B. GREGORY
<i>The Chief of Ordnance</i> -----	MAJ. GEN. LEVIN H. CAMPBELL, JR.
<i>The Chief of Engineers</i> -----	MAJ. GEN. EUGENE REYBOLD
<i>The Chief of Chemical Warfare Service</i> --	
	MAJ. GEN. WILLIAM N. PORTER
<i>The Chief Signal Officer</i> -----	MAJ. GEN. HARRY C. INGLES
<i>The Surgeon General</i> -----	MAJ. GEN. NORMAN T. KIRK
<i>The Chief of Transportation</i> -----	MAJ. GEN. CHARLES P. GROSS

SERVICE COMMANDS

First----- MAJ. GEN. SHERMAN MILES
Second----- MAJ. GEN. THOMAS A. TERRY
Third----- MAJ. GEN. PHILLIP HAYES

Succeeded Maj. Gen. Milton C. Reckord on 1 December 1943.

Fourth----- MAJ. GEN. FREDERICK E. UHL

Succeeded Maj. Gen. William Bryden on 15 January 1944.

Fifth----- MAJ. GEN. JAMES L. COLLINS

Succeeded Maj. Gen. Fred C. Wallace on 2 December 1943.

Sixth----- MAJ. GEN. HENRY S. AURAND

Seventh----- MAJ. GEN. C. H. DANIELSON

Succeeded Maj. Gen., Frederick E. Uhl on 10 January 1944.

Eighth----- MAJ. GEN. RICHARD DONOVAN

Ninth----- MAJ. GEN. DAVID McCOACH, JR.

Succeeded Maj. Gen. Kenyon A. Joyce on 11 October 1943.

Northwest----- COL. FREDERICK S. STRONG

Succeeded Brig. Gen. Knudson D. Worsham on 6 May 1944, who relieved
 Brig. Gen. James A. O'Connor on 20 February 1944.

Military District of Washington----- MAJ. GEN. JOHN T. LEWIS

STAFF DIVISIONS

The Adjutant General----- MAJ. GEN. J. A. ULIO

The Judge Advocate General----- MAJ. GEN. M. C. CRAMER

Director of Personnel----- MAJ. GEN. JOE N. DALTON

Deputy Director----- COL. CHARLES E. HIXON

Military Personnel Division----- BRIG. GEN. R. B. REYNOLDS

Industrial Personnel Division----- MR. WILLIAM A. HUGHES

Succeeded Mr. James P. Mitchell on 17 April 1944.

Special Services Division----- BRIG. GEN. JOSEPH W. BYRON

Officer Procurement Service----- COL. E. G. WELSH

Succeeded Brig. Gen. C. H. Danielson on 17 November 1943.

Chief of Chaplains----- BRIG. GEN. W. R. ARNOLD

Personal Affairs Division----- COL. F. G. MUNSON

Morale Services----- MAJ. GEN. F. H. OSBORN

Executive for Reserve and ROTC Affairs----- BRIG. GEN. E. W. SMITH

Director of Military Training----- MAJ. GEN. W. L. WEIBLE

Deputy Director----- COL. A. G. TRUDEAU

Army Specialized Training Division----- COL. A. W. CHILTON

Succeeded Col. Herman Beukema on 1 March 1944.

Military Training Division----- COL. R. T. BEURKETT

Director of Supply----- BRIG. GEN. F. A. HEILEMAN

Distribution Division----- COL. R. A. CASE

Storage Division----- COL. A. B. DRAKE

Maintenance Division----- COL. W. S. CONROW

Director of Matériel----- MAJ. GEN. L. D. CLAY
Purchases Division----- BRIG. GEN. A. J. BROWNING
Production Division----- BRIG. GEN. H. C. MINTON
Research and Development Division----- COL. R. M. OSBORNE
International Division----- MAJ. GEN. G. E. EDGERTON

Succeeded Brig. Gen. Boykin C. Wright on 31 May 1944.

Renegotiation Division----- MR. J. M. DODGE

Succeeded Mr. Maurice Karker on 15 September 1943.

Readjustment Division----- COL. DAVID N. HAUSEMAN
Fiscal Director----- MAJ. GEN. A. H. CARTER
Chief of Finance----- MAJ. GEN. H. K. LOUGHRY
Audit Division----- COL. J. W. McEACHREN
Accounts Division----- COL. H. W. H. BURROWS
Pay Allotments Division----- LT. COL. D. H. TYSON
Receipts and Disbursements Division----- COL. H. F. CHRISMAN
Special Financial Services Division----- COL. JOHN C. MECHEM
Administrative Division----- COL. D. T. NELSON

